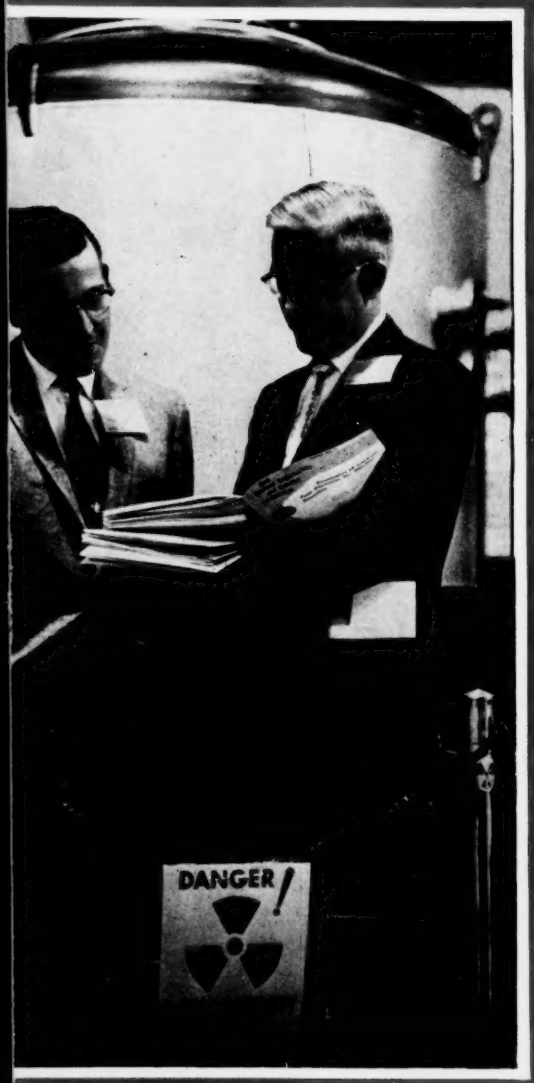
Chemical Week

March 23, 1957

Price 35 cents



Industry mobilizes to defeat bill that would stifle price competition in chemicals . . . . . p. 21

Too many trade associations? Chemical industry now has 40, with more coming . . . . . p. 29

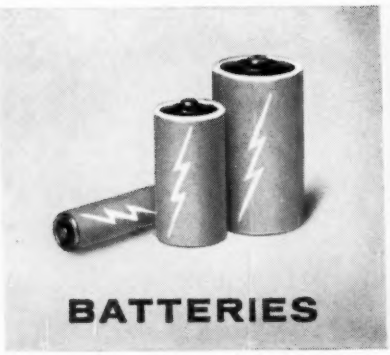
Link between fats and heart disease under probe; plenty of clues, but no firm conclusions . . p. 58

CMRA looks at world chemical scene, finds broad opportunities, hot competition . . . . . p. 74

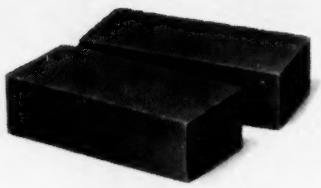
At Philadelphia atomic show, chemical, equipment men pin down profit opportunities . . p. 90

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UNIVERSITY MICROFILMS IN
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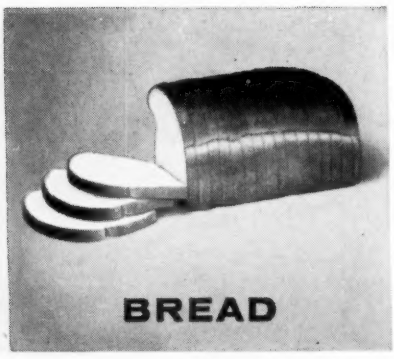
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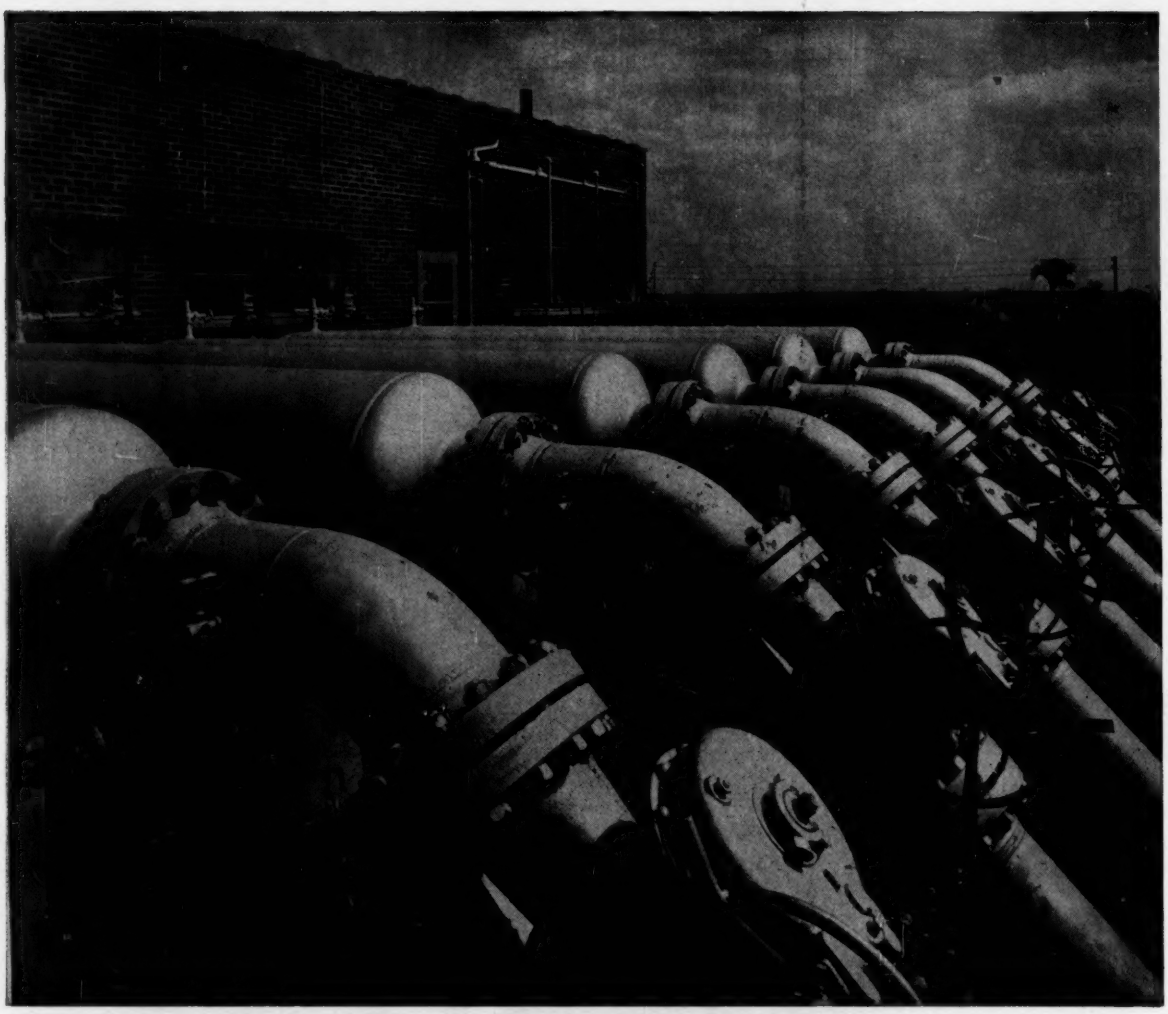
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Chemical Week

Vol. 80, No. 12

TOP OF THE WEEK

March 23, 1957

- **Reappraisal of capital-spending outlook** heaps new fuel on a burning question: Is the boom running out? .....p. 22
- **Is big business big enough?** U. S. Steel Chairman Blough thinks not—and tells why .....p. 23
- **Clothing freshener joins array of antiodor products** that rings up $330 million/year in specialty sales .....p. 44
- **Total synthesis of penicillin V** is accomplished by MIT researchers. Here's what it means to drugmakers ....p. 66
- **Grace's Winne tells CMRA: to get foreign sales,** give hard study to economy, exchange, credit, devaluation, etc., in countries offering the opportunities .....p. 78

14 OPINION

14 MEETINGS

17 BUSINESS NEWSLETTER

21 Proposed 'good faith' pricing law comes under fire from chemical industry during hearings in Washington.

22 Obstacles impeding sale of General Aniline & Film are falling rapidly. Latest Interhandel injunction request is denied.

23 The Teamsters are losing ground now that union chiefs are under fire. Latest development: arrest of Vice-President Hoffa on bribery charges.

23 At last—Smith-Douglass owns Texas City Chemicals.

23 Arkansas industrial gas users may pay higher prices now that 'fair field' pricing is legal.

24 Will Salk vaccine go into short supply? It's a good bet, if the adult vaccination program keeps going at the rate it has been.

29 ADMINISTRATION
Lithium Institute's debut poses question on need for new, one-commodity trade associations.

33 WASHINGTON NEWSLETTER

34 CHARTING BUSINESS

38 Idea for gaining better public understanding of chemical industry's role: lecture-discussion series by industry leaders.

44 SPECIALTIES

52 Helene Curtis, with annual sales of $42 million, fast becoming a big name in the cosmetic field. Here's what's behind the company's growth.

58 RESEARCH
Are dietary fats the key to the high incidence of circulatory disease in the U.S.?

67 TECHNOLOGY NEWSLETTER

70 MARKETS
Trailer show in New York's Coliseum underscores chemical industry's growing stake in a rolling market.

74 Foreign chemical industries are pushing hard in world markets. Here's the detailed picture presented by Chemical Market Research Association men.

78 SALES

84 More companies are turning to underground storage of chemicals.

81 MARKET NEWSLETTER

90 PRODUCTION
Atomic exposition at Philadelphia had much to offer chemical visitors.



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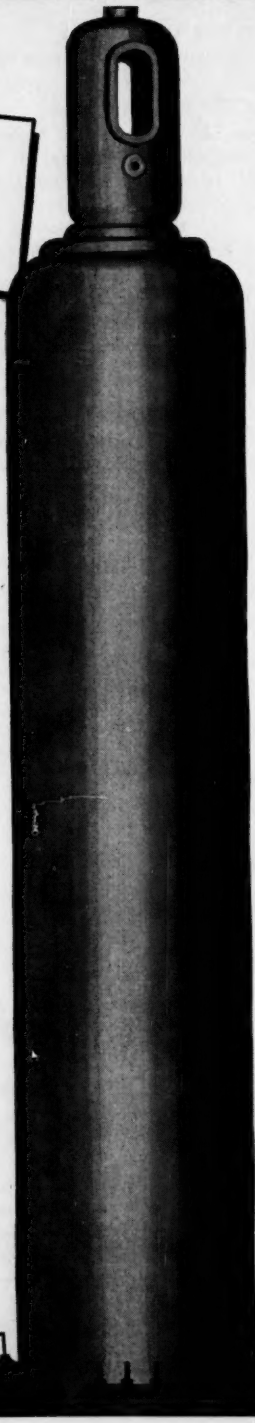
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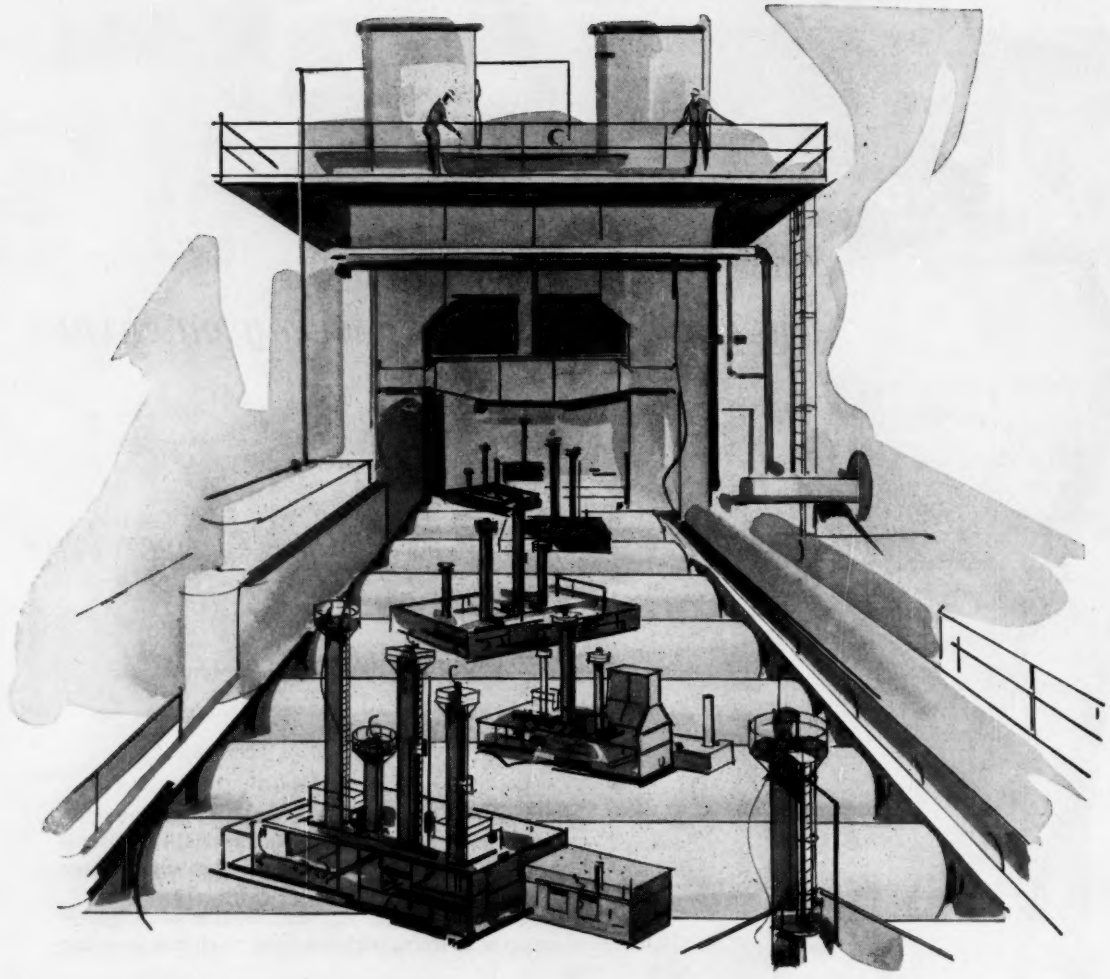
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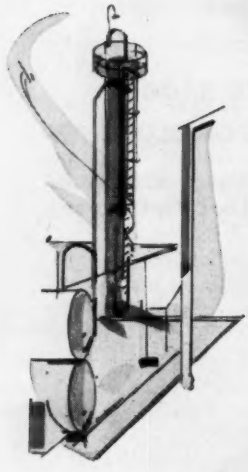
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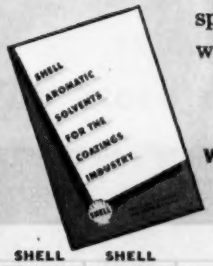
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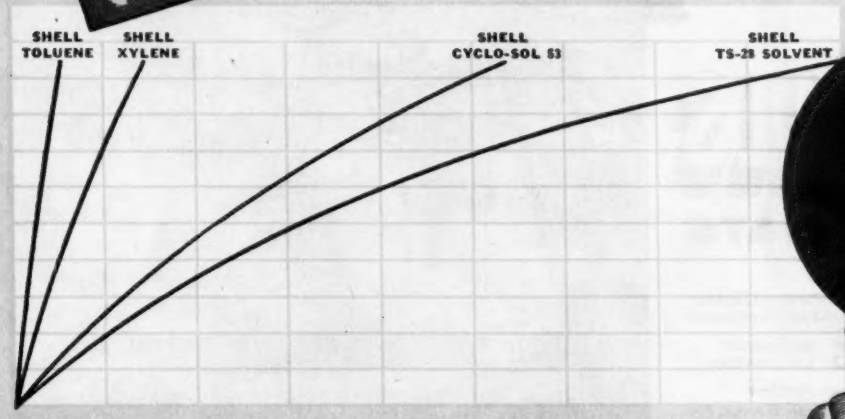
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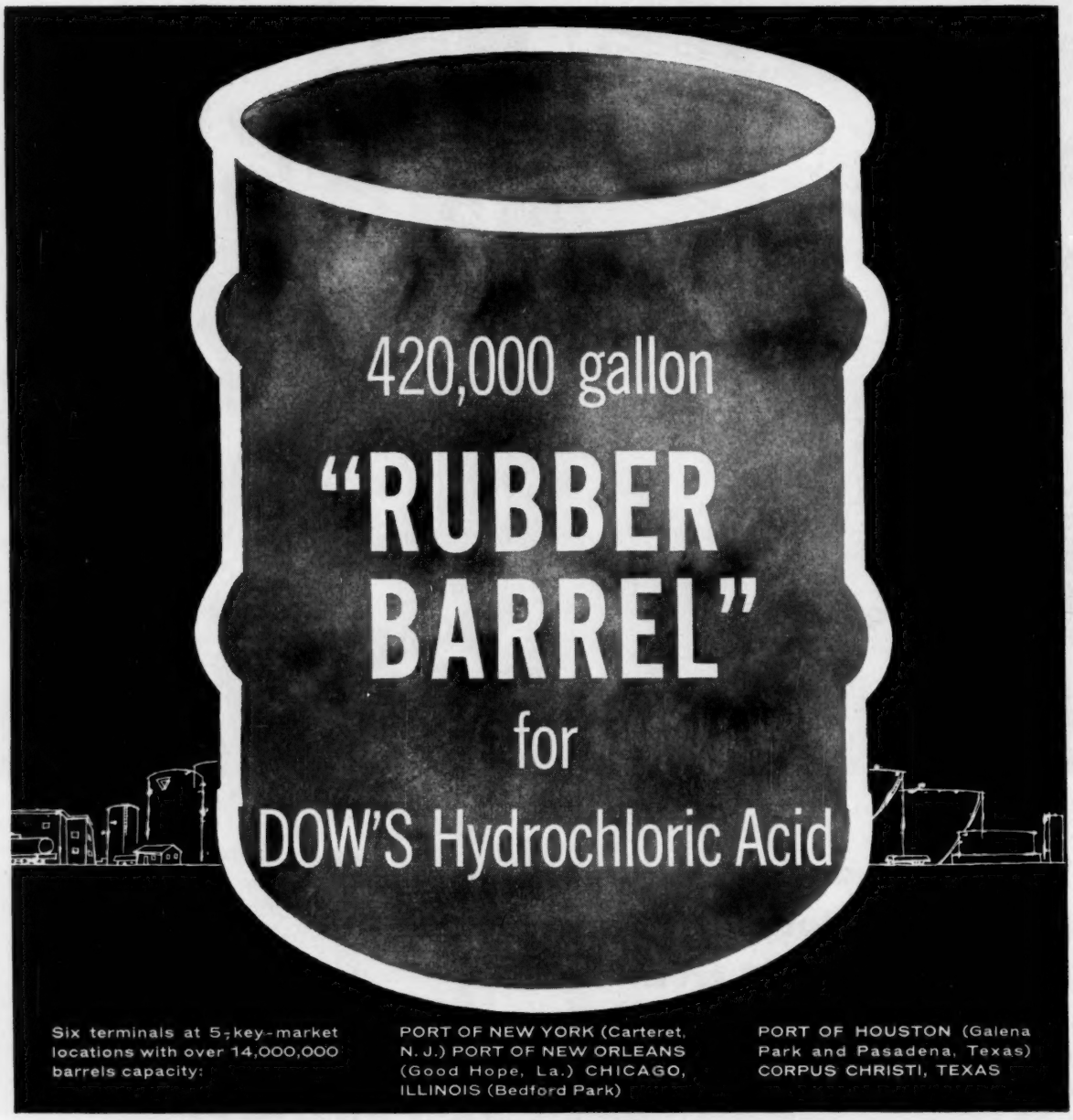
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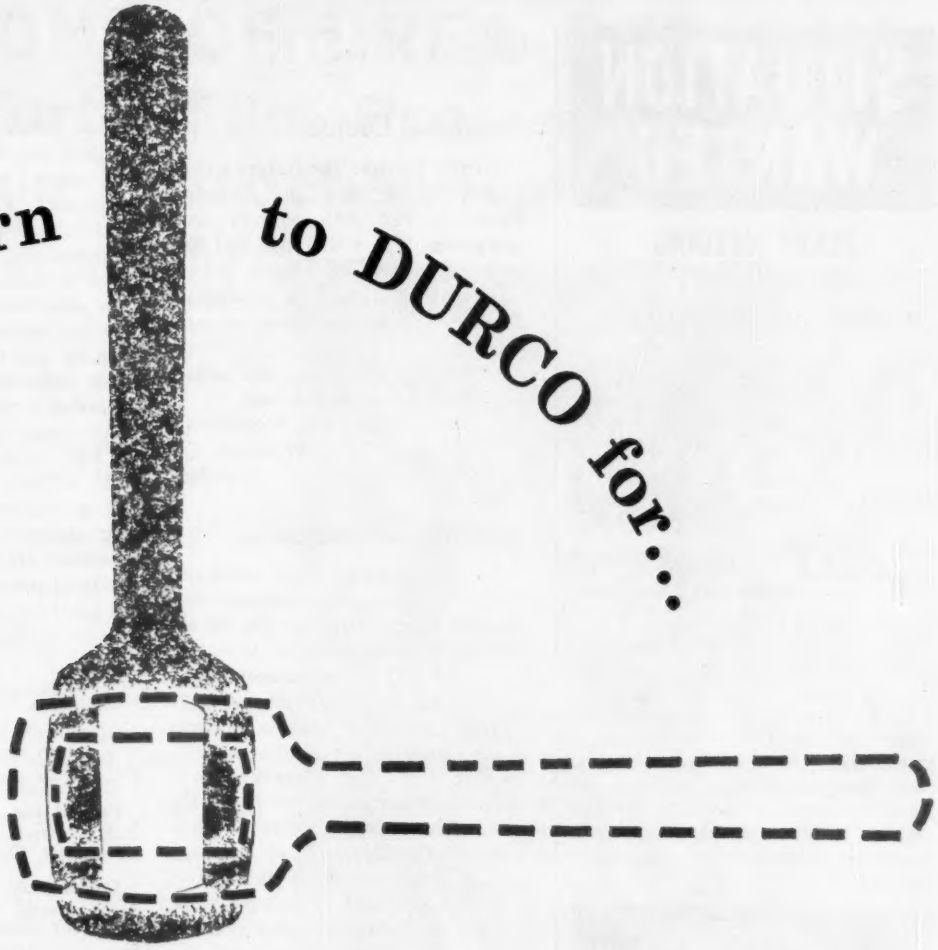
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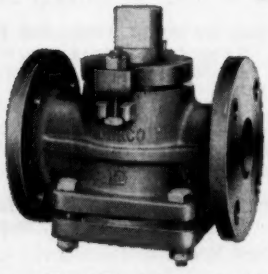
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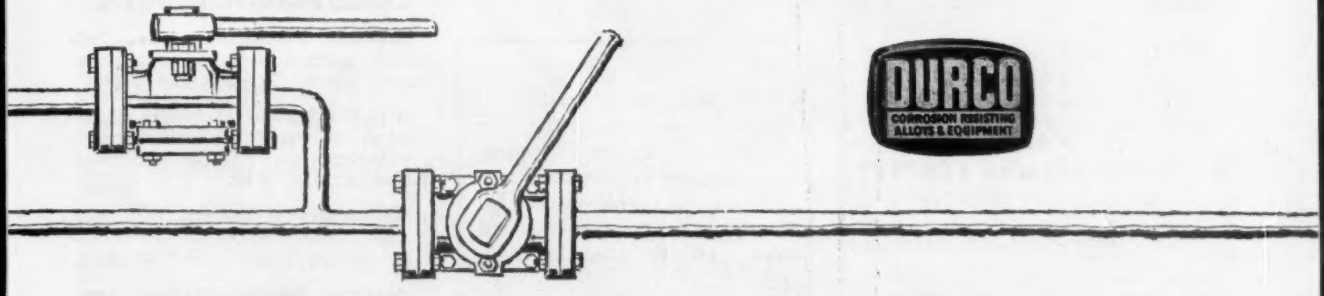
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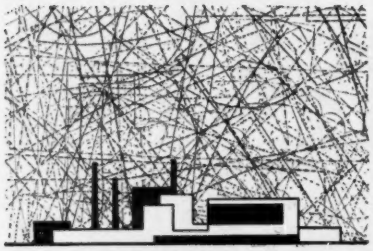
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OPINION

Japanese Orchid

TO THE EDITOR: The feature article, "Japan—Rising Sun on Chemical Horizon" (*Feb. 23*) deserves commendation. It is a thorough and illuminating analysis of Japan's present and predicted status as a growing influence on worldwide chemical markets.

Not only is the article informative, but also it is very well-written . . .

CHARLES L. WINCHESTER
Walworth Co.
New York

Anthracite Economics

TO THE EDITOR: Your otherwise fine presentation of Philadelphia and Reading Corp.'s drive to use its silt reserves to best industrial advantage (*CW, Feb. 23*) has, unfortunately, run afoul of one most vital fact.

Your economic analysis of coal prices makes our silt gasification project look as if it already has two strikes against it. Fortunately, this is not the case. Since several potential consumers of hydrogen and synthesis gas are closely following P&R's projects, it is awkward to find the work given a misleading economic analysis. Permit me, therefore, to state the facts.

The current value of anthracite silt is roughly between 75¢ and $2 per ton, depending on quality, location, etc.—not $6.50, as you erroneously report. The latter figure is the price not of silt, but of the "anthrafines," i.e., No. 4 and No. 5 buckwheat and flotation coal, removed by beneficiation from the raw anthracite silt. Thus, you will see that raw silt is by no means worth more than bituminous. I wish it were!

Similarly, the "economic considerations" that, as you say, led Du Pont to switch its Belle gasifiers from bituminous to natural gas, probably did not lie in the realm of fuel economics, but rather in *process* economics. Bituminous gasifiers were plagued by chronic formation of what Du Pont engineers call "gunk," causing frequent shutdowns and overhaul. In such situations, the relative costs of coal and natural gas are irrelevant. With its high-fusion ash and lack of messy volatiles, anthracite does not behave like bituminous in gasifiers.

Any question marks hovering over the P&R gasification project lie in the realm of scale-up engineering, not in fuel economics. You are correct in your statement that critical process economics are still to be proved. The results of operating the semicommercial plant are expected to provide the answers to these questions.

HOWARD A. NEWMAN
Philadelphia and Reading Corp.
New York

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: H. C. E. Johnson, Chemical Week, 330 W. 42nd St., New York 36, N. Y.

MEETINGS

Council for Agricultural and Chemurgic Research, annual conference, Congress Hotel, Chicago, March 26-28.

Commercial Chemical Development Assn., plastics meeting, Statler Hotel, New York, March 27-28; resort meeting, French Lick, Ind., May 13-14.

Illinois Institute of Technology, 19th annual American Power Conference, Hotel Sherman, Chicago, March 27-29.

American Society of Mechanical Engineers, 5th engineering management conference, Penn-Sheraton Hotel, Pittsburgh, March 27-28.

Colloquium on radiation effects, Johns Hopkins University (Shriver Hall), Baltimore, March 27-29.

Society of Plastics Engineers, Inc.; theme: "Plastics in Building"; Statler Hotel, New York, April 3.

American Chemical Society, 131st national meeting, Miami, April 7-12.

Chemical Progress Week, April 8-12.

American Management Assn., 26th annual national packaging conference, Palmer House, Chicago, April 8-10.

American Institute of Mining, Metallurgical and Petroleum Engineers, 40th annual conference, Penn-Sheraton Hotel, Pittsburgh, April 8-10.

Bituminous Coal Research, Inc., annual meeting, Greenbrier Hotel, White Sulphur Springs, W. Va., April 18-19.

American Industrial Hygiene Assn., conference, Kiel Auditorium, St. Louis, April 22-26.

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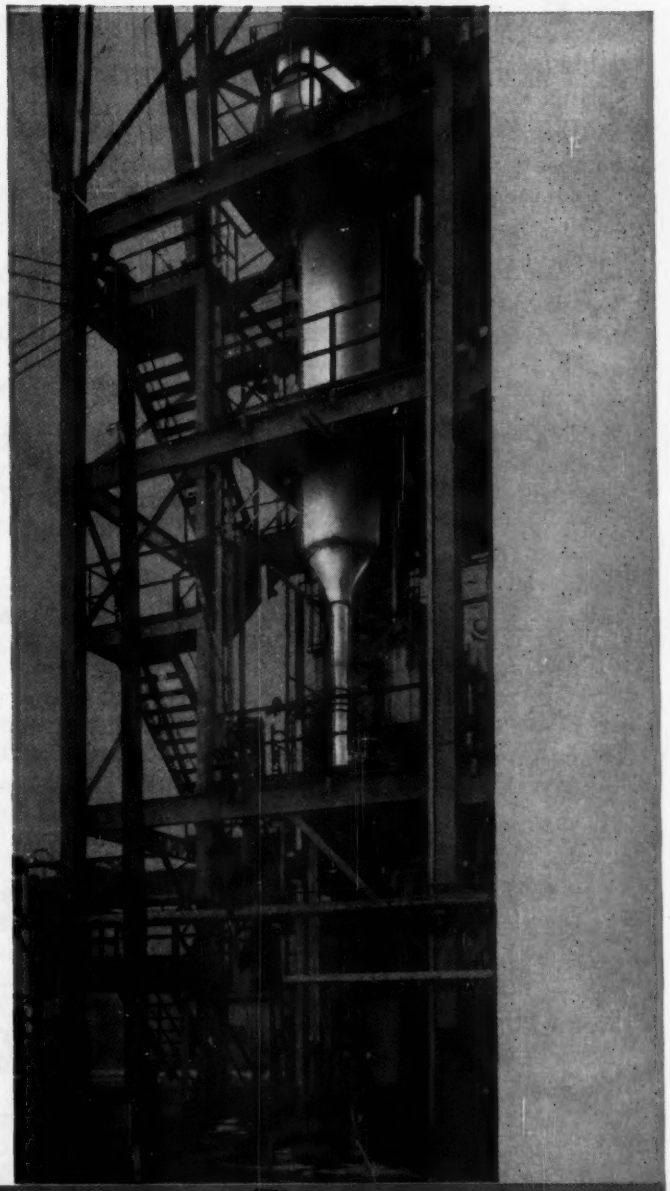
Relatively low temperature prevents degradation of the urea.

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The Vulcan Inventa process, used by Sohio, overcomes two major difficulties which have hampered urea production: (1) Rapid and severe corrosion in the reactor where ammonia and carbon dioxide are combined under high temperature, and (2) difficulty of separating the unreacted carbon dioxide and ammonia. The Turba-Film Processor plays an important part in the system.

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RODNEY HUNT

ideas

new ways to solve problems — with chemicals

NEW HEAVY-DUTY LIQUID DETERGENT FORMULAE --- mixtures of triethanolamine, nonionic surfactants and carboxymethyl cellulose --- have shown better cotton detergency under test than the more usual phosphate-alkylaryl sulfonate liquid mixtures, and have exhibited a washing action equal to that of heavy-duty powders.

Liquids have these advantages over powders: (1) no dust; (2) can be packaged in metal or glass containers which do not become soggy; (3) dissolve readily in hot or cold water; (4) take up less space because of high density.

A RECENTLY DEVELOPED INSECT REPELLENT designed specifically to shoo horn flies away from cattle, is reported to contain an ethylene oxide-ortho-cyclohexyl phenol condensation product as the active ingredient.

A DEVICE FOR MINE BLASTING employs nitrogen tetroxide and a hydrocarbon as the explosive mixture. It consists of an unpartitioned container holding frozen nitrogen tetroxide, a separate body of frozen hydrocarbon and a detonator.

A hole is bored in the solid composite and the device is placed inside. The contents of the container are melted, tetroxide mixes with hydrocarbon, and the detonator explodes the mix.

NEW HYDRAULIC FLUIDS take advantage of the stability, solvent properties and desirable temperature characteristics of ethylene glycol.

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Business
Newsletter

CHEMICAL WEEK
March 23, 1957

Minnesota Mining's purchase of rights to Kel-F plastic manufacture from M. W. Kellogg greatly strengthens 3M's position in fluorocarbons. Though far from new to the fluorocarbon business (it has been selling fluorine-containing surface active agents and textile treatments), 3M has never offered fluorinated resins commercially. Now, via its purchase of Kel-F, it will make and sell a high-temperature, corrosion-resistant resin suitable for applications in such fields as chemical processing and the pharmaceutical packaging fields.

The Kel-F unit won't be moved to Minnesota; 3M, instead, will take over the operation of the fluorocarbon portion of Kellogg's Jersey City plant. Both firms decline to comment concerning size or output of the unit; the purchase involved exchange of stock; no cash was involved.

Silicones, too, will be made by 3M. It is building a pilot plant now at Hastings, Minn., but won't reveal cost or size of the plant. Operation will use purchased intermediates; 3M won't make its basic raw materials, for now.

Kellogg says its polyethylene plans aren't affected by the Kel-F sale. Kellogg has a manufacturing license from Phillips, but has said nothing publicly yet as to when, where, or how big a unit it contemplates.

•

Jefferson Lake Sulphur will start drilling for sour gas in the Calgary area of Canada within 90 days. It's planning a "multimillion dollar" gas processing and sulfur recovery plant there on an 80,000 acre natural gas lease farm-out from Mobil Oil of Canada. Initial plans call for production of about 350 long tons/day of sulfur.

•

A labor election at Strategic-Udy Metallurgical and Chemical Process's Niagara Falls, Ont., plant saw a fight between the United Electrical, Radio and Machine Workers and the International Chemical Workers Union turn into a two-to-one ICWU victory. There's another hassle between the two coming up this week at the North American Cyanamid Ltd. plant in Niagara Falls—a plant where UE is currently the bargaining agent.

•

Chicago's health department will borrow Salk vaccine from druggists in order to complete the city's program of inoculating school children. Underlining the sudden shortage of vaccine *(see p. 24)*, Chicago's Board of Health had found itself unable to buy additional vaccine from manufacturers.

•

Pfizer's using a novel idea to publicize its annual report. Next Sunday, it will publish its report as a 16-page supplement to three big

metropolitan Sunday papers—The Chicago *Tribune*, Los Angeles *Times*, and the New York *Times*.

•

Baltimore plant expansions totaling $50 million have been dropped. That's the word from the Baltimore Assn. of Commerce in tallying planned expansion of industrial plants in that city, dropped as a result of the repeal, last December, of that long-standing exemption from property taxes on manufacturers' machinery and inventory.

Since chances are slim that the repeal law would be declared illegal, those promoting industry in Baltimore look now to the state for help. Two bills were introduced in the Maryland legislature last week which, it was hoped by industry, would make the tax exemption of manufacturers' machinery and inventories mandatory, but would elsewhere broaden the taxing power of the city.

•

Union Carbide and Carbon Corp. wants to shorten its name. A letter sent to the company's stockholders asks their approval of shortening the firm's name to Union Carbide Corp. The proposal will be voted on by stockholders at their April 16 meeting; majority approval is required.

Carbide's Linde division, in seeking to end the strike that has inactivated five of its oxygen producing plants in the U.S., last week sent out invitations to workers at its Kitanning, Pa., plant to come on back to work at 8 o'clock on March 18. It's the same technique it tried, with little success, the week before at the firm's Essington, Pa., plant.

•

Insuring employees at nuclear power stations won't be a worry, if English practice is any guide. Third party insurance "to very substantial limits" will be readily available in Britain.

According to A.G.M. Batten, assistant general manager of the Alliance Insurance Co., it has been found that there are very few atomic accidents, and the operation of atomic reactors has shown an accident ratio much lower than that expected in industry as a whole.

Batten told the Insurance Institute of London that damage to a reactor by the heat it generated would not be covered by ordinary fire policy term. It is also thought that normal explosion coverage provided by fire insurers would not be extended to cover explosions at atomic power stations.

Batten, referring to radioisotopes, pointed out that fire hazards are increased by the fact that radioactive contamination may delay the extinguishing of a fire. Though it's still a problem, insuring against accidents in the use of isotopes seems to carry few difficulties—normal underwriting practices apply. A full report of findings on this subject of the British Insurance (Atomic Energy) Committee, incidentally, will be published soon.



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MCA's Fowler takes the stand to lash at . . .

Rep. Patman's "good faith" pricing



WIDE WORLD

Price Bill Stirs a Fracas

Chemical and petroleum producers —who fought the hard and successful fight last year against the Kefauver-Patman "Good Faith" pricing bill —were joined this week by a host of industrial allies as the Senate Monopoly Subcommittee signaled a resumption of the fray.

Lined up for subcommittee hearings were some 180 groups and individuals, eager to get in a word in support or opposition to the proposal, described by its proponents as a "Magna Carta for small business" and by opponents as "the most outrageous sort of legislative sophistry." It has also been called a major threat to price competition at all levels of the economy.

Focal Point: Object of all the squabbling is the proposed amendment to the Robinson-Patman Act that would prohibit a seller from making a "good faith" offer to meet a competitor's lower price if the effect is a "substantial lessening of competition" among their customers. Its sponsors are Sen. Estes Kefauver (D., Tenn.), chairman of the Senate monopoly group, and House Small Business Committee Chairman Wright Patman (D., Tex.).

Among opponents, who spoke up as hearings opened, were Henry H. Fowler, General Counsel of the Manufacturing Chemists Assn., and Augustus Hemenway Eustis, the peppery octogenarian president of one of MCA's small business members—the 335-employee Virginia Smelting Co.

The argument over "good faith" meeting of competition has been going on a long time. Last year, manufacturing groups underestimated its political appeal—woke up when the bill cleared the House by a whopping 393-to-3 vote. It almost certainly would have passed the Senate, too, but time ran out and Congress adjourned.

Other highpoints in the bill's battle-scarred and controversial history: A Supreme Court decision ruling that the "good faith" defense was valid against charges of price discrimination (the Kefauver-Patman bill would override that ruling); a Presidential veto—by Harry Truman—of a similar measure introduced earlier.

This time, the measure was introduced early in the session as H. R. 11 in the House and as S. 11 in the Senate.

But, since the measure carried the aura of small business, oil industry strategists in particular were fearful it would pass overwhelmingly if it got to the floor for a vote. Hence they felt it had to be stopped in committee.

But Kefauver, apparently upset by the prospect of faltering support, came out with his charge that big oil companies and certain trade associations had conspired to wage a big propaganda campaign against the bill. He issued a flock of subpoenas, began hearings March 12.

Somewhere along the line, however, other groups of manufacturers became concerned about the bill. These include chemicals, cement, lumber, coal and steel firms.

This seems to have given heart to those in Congress who may have had their doubts all along. Sen. Alexander Wiley (R., Wisc.), who is a co-sponsor of the bill, is currently saying that the matter deserves serious, prolonged consideration, and he wants the hearings to be thorough. This may be explained by reports that some farm groups also are about to come out against the bill.

Likely Approval: Still, it's likely that the Senate Antitrust Subcommittee, which is holding the hearings, will approve the measure. There will be a tougher struggle in the full committee, where Sen. Joseph O'Mahoney (D., Wyo.)—an ardent antitruster—is expected to throw his weight against the bill. But, chances are good it will eventually get through there, too. At this point, it's impossible to tell how it will fare on the floor of the Senate itself.

Even if the bill passes the Senate, there's no guarantee it will have clear sailing. Chairman Emanuel Celler (D., N.Y.) of the House Judiciary Committee is known to have serious reservations about the bill, although he voted for it last year. He has shown no inclination to rush ahead with hearings. So a key factor will be whether—and when—Celler calls hearings.

Behind all this is the question of the White House support. No one really knows whether Eisenhower would or would not sign a measure if passed.



JUDGE PINE: Does his quick decision presage . . .

Quick GAF Sales?

Interhandel's request for an injunction to block the sale of government-held stock in General Aniline & Film Corp. was swiftly turned down last week by the federal district court in Washington, D. C.

Federal Judge David A. Pine refused to grant the plea for an injunction that would give the Swiss firm more time to produce records.

Interhandel had contended that the proposed sale by the government, which seized all the GAF stock during the war as alien property, was illegal since the Trading-with-the-Enemy-Act states that vested stock can't be sold while lawsuits are pending.

But the Office of Alien Property contends that as far as the district court is concerned, the decision is final, and the government may go ahead and sell 75% of its holdings as it announced earlier this month (*CW, March 9, p. 22*). Attorney General Herbert Brownell has already called for bids on the stock, has set May 13 as the deadline.

Interhandel is expected to take the case to the U.S. Court of Appeals. But, unless it's able to produce the required records proving its wartime neutrality, observers feel an injunction may be difficult to obtain.

Provided Interhandel isn't successful in further efforts to block the sale, the government will sell more than $80 million worth of GAF stock.

Capital Spending Off Pace

A new survey of plant and equipment spending, turned out last week by the Securities and Exchange Commission and the Commerce Dept., shows that firms in chemicals and allied products plan to spend about $344 million more than last year. That's a 25% increase, for a total of $1.7 billion.

Still, 1957 planned spending is sharply off the 1956 pace, when chemical producers increased plant and equipment outlays $439 million—one factor might be narrower profit margins in chemicals. Two groups, Textiles, and the broad Stone, Clay and Glass products group have also scheduled smaller total expansions than in 1956.

Expected Pause: Forecasters generally had counted on some pause in the rate of growth, figured a 1957 gain of about 10%. Now, on the basis of the survey figures, it's possible that price rises in construction goods and services may account for almost all of the 6.5% gain in total dollars over 1956, with little, if any, net gain in actual physical capacity.

Still, the survey contains two indications of how businessmen view the rest of the year—both are on the cheerful side:

- Sales are expected to rise 8% in manufacturing, 4% in trade, and 9% for utilities, measured in dollar value.
- Capital goods outlays for the second half of the year are expected to be practically the same as in the first half, with no hint of a gathering rush to cancel projects. The first half is expected to hit $18.6 billion, and the second half $18.8 billion.

The survey results point to a lessening of inflationary pressures, compared to 1956, and to this extent will reassure the White House and the Federal Reserve—where most of the worry over inflation has been shown. However it also throws a new question mark into the 1957 picture as seen in recent weeks by most of the career government economists.

There's a rolling readjustment flavor to the survey. Several of the major industrial groups are up sharply, and a few are down just as sharply. On the other hand, the overall gain of 6.5% has a healthy undertone which government analysts are quick to point out. It is not based on the spectacular performance of a few leaders, but is shared in by most industrial groups. Solid expansion is in store during the year for most industrial lines, if the survey is borne out. The industries cutting their plant and equipment outlays are in the minority.

Process Spending Plans Stay High

	1955	1956	1957 (est.)	% change from '56
	(million dollars)			
Chemicals	$1,016	$1,455	$1,799	+24
Paper	518	801	835	+ 4
Rubber	150	201	208	+ 3
Stone, Clay, Glass	498	686	633	− 8
Petroleum, Coal products	2,798	3,135	3,403	+ 9
Primary non-ferrous metals	214	412	821	+99
Textiles	366	465	379	−18
Process Industries total	5,560	7,155	8,078	+13
Manufacturing total	11,439	14,954	16,414	+ 9
All business total	28,701	35,081	37,361	+ 7



HOFFA: Union vice-president under Federal scrutiny.

Teamsters in Turmoil

The glamor is off the giant push of the omni-organizing International Teamsters Union, whose activities in the chemical field have been widespread (*CW, Aug. 25, '56, p. 21*).

Disenchantment set in with opening of investigations by the Senate Select Committee on Labor and Management Practices and the embroilment of Teamster West Coast Vice President Frank Brewster in charges of nefarious activities in Oregon. It came to a head last week with the arrest of East Coast V.P. James Hoffa on charges of bribing a member of the Senate committee's staff.

Still Active: Nobody's suggesting that the union at large won't continue to press for recognition in such companies as Smith, Kline, and French, and Wyeth Laboratories, but there's a noticeable feeling among chemical process management in general that the union has a tough row to hoe to overcome the tainted aura that's now surrounding it.

The Teamsters are well known for their philosophy of "organizing anything that isn't nailed down." And because of their vital role in controlling vehicular movement, their ability to cut off company supply lines provides strong leverage when it comes to organizing employees. Moreover, the union hasn't shown much inclination to confine its activities to employees in the trucking and transportation trades.

Clear Track in Texas

After several disappointments and a myriad of legal entanglements, Smith-Douglass Co. Inc. has become the legal owner of Texas City Chemicals, Inc. (CW Business Newsletter, March 9).

Under its new reorganization plan, approved by the U.S. district court (Galveston), Smith-Douglass becomes the sole stockholder of the bankrupt Texas City firm. The facilities will be operated as a separate corporation through SD's Coronet Phosphate Div.

Smith-Douglass had hoped to take over the Texas City plant late last year; but after it had received court approval, the Internal Revenue Dept. refused to grant it a fast tax write-off on Texas City Chemicals' losses (*CW, March 2, p. 16*). So S-D submitted a new reorganization plan, won approval by the courts and is now ready to take over again—"with no more hurdles to clear," say firm officials.

When the plant begins operating again, within a few weeks, its production schedule will include sulfuric and phosphoric acid, feed-grade and fertilizer-grade dicalcium phosphate, high-analysis pelleted fertilizers, and liquid-base fertilizer.

Theory Becomes Law

A bill to legalize the "fair-field" price theory for determining gas rates in Arkansas has been signed into law by Gov. Orval Faubus.

The move follows a state supreme court decision that there was no statute in Arkansas law empowering the State Public Service Commission to use the fair-field method to fix gas prices.

Under the old method, a gas company was allowed only a 6% return on its investment, and all production facilities had to be figured in the rate base. When it was alleged by some 11 Arkansas industrial users that Arkansas Louisiana Gas Co. based all its charges on the cost of gas purchased from other producers —did not give a reduction on gas it produced in its own fields at a lower cost—the question of legality arose.

Now that the theory has been legalized, Ark-La will be able to realize an 8% return—2% above its old profit allowance—and charge higher prices to its customers.



BLOUGH: Steelman on top of a ticklish question.

Bid for Biggerness

Chemical firms, relatively speaking, are frequently counted among the ranks of large businesses, though few chemical management men have cared to discuss the "big business" question in public, much less promote the theme.

Last week, however, the board chairman of U.S. Steel, Roger Blough, came out in favor of even bigger businesses. In effect, said he, it may be necessary to form even larger enterprises than now exist in order to develop resources and industrial possibilities to their full potential.

"Our biggest corporations," Blough told the Economic Club of Chicago, "are getting too small to do all the things expected of them."

As illustration, he cited the titanium industry, where such chemical firms as Allied Chemical and Du Pont have joined forces respectively with metals refiners Kennecott Copper and Crucible Steel to bring together the vast resources of each. There are others, too: Olin-Mathieson and Revere Copper & Brass, and National Distillers and Cities Service, to cite a couple.

Whether Blough was indirectly showing his approbation of the underfire Bethlehem-Youngstown steel merger is a matter of opinion. But there's little question that corporate management, including that of chemical process firms, has a cue for some aggressive selling of even bigger business organizations.



WIDE WORLD

SAN DIEGO ADULTS, 450,000 of them, will get free shots, but other adult inoculation drives are limping, because . . .

Salk Reserves Dip as Demand Grows

Polio vaccine inoculation programs like the one in San Diego, Calif., (*above*), have turned last winter's vaccine glut into something of a shortage.

Though the shots are attractively free in some cities like San Diego, most of the shortage is the result of publicity, spearheaded by medical associations across the country, encouraging adult inoculation where people get and pay for their shots in doctors' offices. Although at the first of the year there were 26 million cc. of vaccine piled up in dealers' and manufacturers' inventories, today many areas can't get what they want. Manufacturers report that all vaccine is now in distribution pipelines—"somewhere between the plant and the arm" as one manufacturer phrases.

The areas that are short are those which had been talking about setting up adult inoculation programs, but are just now getting them underway. Most such areas didn't have enough on hand to cover a big drive, and didn't get their orders in before the manufacturers exhausted their inventories.

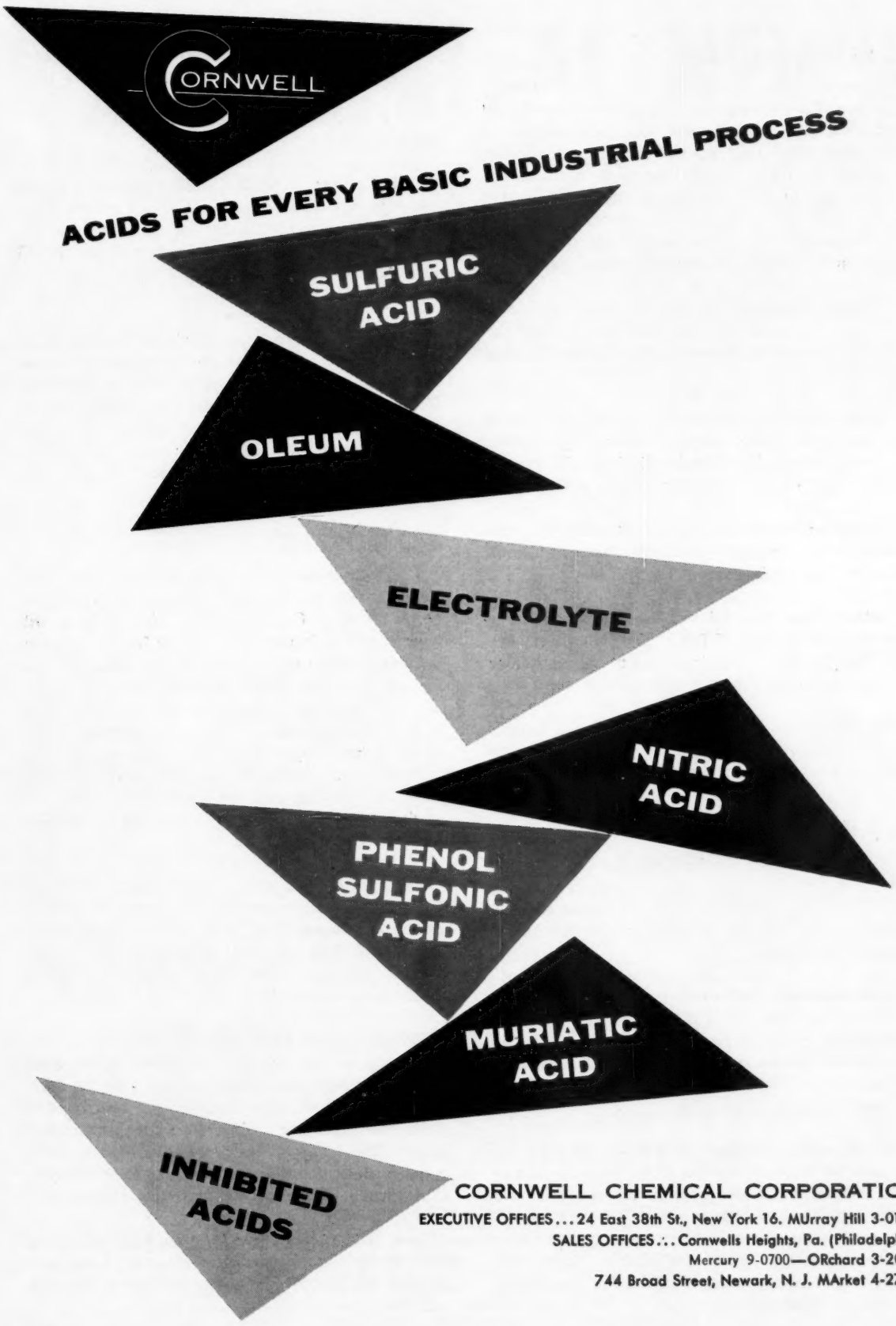
Plan Ahead: The current shortage results from a fluctuating demand which the inflexible manufacturing process can't adjust to. The supply for any given month must be started 4 months ahead of time (it takes that long to make and test a batch). At the same time, makers can't afford to build up inventory: after six months, unused vaccine must be destroyed. Against this, Eli Lilly says it sold more vaccine in the first week of March than it did last November and December, combined. On the other hand, Lilly had to destroy 25,000 cc. of outdated vaccine in January. A shortage of the magnitude of that in 1955, when the vaccine was new, isn't expected. Production is climbing: where an average of 5 million cc. per month was produced in January and February, 6-8 million cc. will be made this month; almost twice as much will be made in April. Most makers, thus, don't expect an acute shortage for more than a few days.



Hydrazine Takes Big Step

Hydrazine development passed a milestone last week when a tank-car of the material left Olin Mathieson's Lake Charles, La., plant. Though commercial production has been under way since 1953, deliveries up to now have been in small-container lots.

Hydrazine's best-publicized role is in rocket propellents, but it's also moving into such uses as growth-regulant, oxygen scavenger in water-purification, and a number of applications in the drug, agriculture and minerals refining lines.



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COMPANIES

Diamond Match Company plans to diversify into a new line of products by merging with Gardner Board and Carton Co., Middletown, O. If stockholders of both firms agree, Gardner will become a division of Diamond by issuing 750,000 shares of its stock. The Ohio firm, with sales of $40 million last year, makes paperboard, cartons and food containers. E. T. Gardner, board chairman of the paper products company, has been a Diamond director for several years.

•

Frontier Chemical Co., Wichita, Kans., a division of Union Chemical and Materials Corp., has purchased a controlling interest in Rare Earths Chemical Co., Mead, Colo.

•

Eagle-Picher Co., Cincinnati, O., has acquired all the assets, including patents, of Gora-Lee Corp., Stratford, Conn. The Cincinnati firm will operate Gora-Lee as a part of its Ohio Rubber Co. division.

•

Research-Cottrell Inc., Bound Brook, N.J., has formed a new Canadian subsidiary, Research-Cottrell (Canada) Ltd., with offices in Toronto, Ont.

•

Atlanta Paper Co., Atlanta, Ga., has purchased all the outstanding stock of Palm Container Corp., Miami, Fla. Arthur L. Harris, president of the Atlanta firm, is also board-chairman of the Miami company.

•

Corn Products Refining Co. has acquired Refined Syrups & Sugars Inc., Yonkers, N.Y., in exchange for 128,288 newly issued shares of common stock.

EXPANSION

Zirconium-Silicon: Stauffer Chemical Co. will boost zirconium and silicon tetrachloride capacity at its Niagara Falls, N.Y., plant by 40%. New construction is already under way and is scheduled for completion within three months.

•

Petrochemicals: El Paso Natural Gas Products Co. is drawing up plans for a 6,500 bbls./day crude oil refinery and alkylation plant near Odessa, Tex. It will also build a six-inch products line extending from the refinery to the El Paso area. The new units should be ready by early '58.

•

Silicones: General Electric will add a new two-story research lab to its Waterford, N.Y., plant as part of a $3 million expansion program planned this year at the New York silicone complex. The new laboratory is scheduled for completion by early '58. Other 1957 construction, still in the planning stages, will boost rubber compounding facilities and production of silicone intermediates.

Limestone: Edna Bay Pure Stone Co., Dallas, Tex., is planning a $5-million limestone processing plant near Vancouver, Wash. The firm hopes to ship limestone in from Alaska, process about 300 tons/day at the new plant.

•

Pulp: Alaska Pine & Cellulose will add a 350 tons/day pulp-drying machine to its mill in Port Alice, British Columbia. Scheduled for completion in the summer of '57, the new unit will cost about $13 million. Much of the increased output will go to export markets.

•

Paper: Fiberboard Paper Products Corp. plans to build two pulp and paper mills in California—one in the Sacramento River Valley, the other in Humboldt County. Cost of the two: about $32.5 million. Fiberboard is also blueprinting a carton plant in the Los Angeles area, which, together with other outlays slated for Southern California, will cost nearly $10 million.

FOREIGN

Dyestuffs/India: Amar Dye-Chem, the Indian dyestuff undertaking in which Sterling Drug's Hilton Davis Chemical Co. division has 10% interest, will issue $630,000 in new stock. Hilton Davis will retain its present share of the company by taking 10% of the new stock (the Indian promoters will take 40%). The new stock has been underwritten up to $315,000 by the Indian Industrial Credit and Investment Corp., in which more than $1 million is invested by U.S. interests (e.g., Westinghouse, Olin Mathieson, the Bank of America, and the Rockefellers). The new stock is being issued to provide the new $1.5-million plant with working capital.

•

Fertilizer/Angola: Companhia Uniao Frabril will build a fertilizer plant in the Portuguese-African colony of Angola. The plant will have an annual capacity of 140,000 tons of fertilizer and 40,000 tons of ammonia. Part of the production will be available for export.

•

Fertilizer/South Korea: A $20.7-million urea fertilizer plant will be built at Naju, South Korea, using German money. The investment will take the form of a loan to Honam Fertilizer Co., to be repaid by the Korean government three years after construction begins. The loan will be guaranteed by the International Bank for Development and Rehabilitation. Construction of the 85,000-tons/year plant should take 18 months.

This week a team of six West German technicians representing the German firms Demag, Lurgi and Siemens will launch a preliminary survey of the area near Seoul.

ADVERTISEMENT—*This entire page is a paid advertisement* *Prepared by U. S. Industrial Chemicals Co.*

U.S.I. CHEMICAL NEWS

March 23 ★ A Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1957

Trimethyl and Triethyl Aluminum Piloted by U.S.I.

Trimethyl and triethyl aluminum, highly flammable liquids which ignite spontaneously in air, are now being produced by U.S.I. in pilot plant quantities. At present they are being tested as ignitors and fuels for ram jet and turbo jet engines, and also show possibilities as polymerization catalysts, and intermediates for chemical synthesis.

A sodium-based process is used to synthesize these two materials in the pilot plant, a process which can be used to produce them in commercial quantities as well. It is predicted that the commercial price will range between $2 and $5 per pound, although the price in pilot quantities is considerably higher.

Also available from the pilot unit is methyl aluminum sesquichloride, a mixture of methyl aluminum dichloride and dimethyl aluminum chloride. This product too may find use as a catalyst or chemical intermediate.

Alcohol and Chemical Sales Now Under Johnson



Warren E. Johnson has been named Manager of Alcohol and Chemical Sales for U.S.I. Mr. Johnson has been with the U.S.I. sales organization since 1940. He became Manager of the Boston Sales Division in 1944 and Manager of U.S.I. Chemical Sales in 1950. With this change, Mr. Johnson becomes responsible for industrial alcohol sales in addition to his previous product responsibilities. U.S.I. alcohol sales had formerly been under Alden R. Ludlow, Jr., who was recently named Director of Sales for the company.

Byck Appointed Manager of U.S.I. Heavy Chemical Sales



Lawrence C. Byck, Jr., has been named Manager of Heavy Chemical Sales for U.S.I. He has been assistant to the Manager of Chemical Sales during the past four years, and has been with the U.S.I. organization since 1945, in research and technical liaison positions as well.

In his new position, Mr. Byck will be responsible for sales of ammonia, nitric acid, and nitrogen solutions from the U.S.I. synthetic ammonia plant at Tuscola, Illinois. He will also be responsible for sulfuric acid sales from U.S.I.'s three plants at Tuscola, Illinois, Dubuque, Iowa and Sunflower, Kansas, and for sales of phosphoric acid from U.S.I.'s newly completed wet-process plant at Tuscola.

U.S.I. Phosphoric Acid Plant At Tuscola is Now Onstream

Plant is First in Country to Produce Wet-Process Acid Exclusively for Solid Fertilizer Industry

Thirty thousand tons per year of phosphoric acid (measured as P_2O_5) are now being produced at U.S.I.'s new Tuscola, Illinois plant. The bulk of the acid is expected to be used by solid fertilizer manufacturers in the Mid-west, making this the first wet-process phosphoric acid plant in the country to produce for non-captive consumption only. Availability of phosphoric acid in this area answers the need for a rich source of phosphorus, a need which has become evident with the trend toward high-analysis plant foods.

In the plant, insoluble phosphate rock is digested with spent sulfuric acid from the neighboring facilities of National Petro-Chemicals Corporation, a subsidiary of U.S.I. Calcium sulfate is filtered off and the resulting phosphoric acid is concentrated and marketed as a fertilizer raw material.



Section of U.S.I.'s new phosphoric acid plant.

With the completion of this plant, U.S.I. now makes ammonia, nitrogen solutions, sulfuric acid, and phosphoric acid at Tuscola. Because this area is the site of an integrated chemical center, the company feels that it can also manufacture other fertilizer raw materials if the demand becomes evident.

MORE

April 8-12 Set for 4th Chemical Progress Week

The Manufacturing Chemists Association (MCA), national sponsor of Chemical Progress Week, reports that industry support for the program is greater this year than ever before.

Chemical Progress Week was inaugurated in 1954 as a nationwide effort on the part of the Chemical Process Industries to acquaint the American public with the importance of chemistry and the chemical industry in daily life.

As has been the case in previous years, the working organization behind Chemical Progress Week is manned by volunteers from the industry. Last year some 1,500 participants were listed at National Headquarters and it is believed that approximately 7,500 additional people took an active part in implementing the program.

National Headquarters has prepared a wide range of materials and suggestions for participating companies to present to the public. Included are literature, displays, ads, radio and TV material, speeches, films, publicity releases and sample proclamations to be made by state governors.

Complete kits of ideas, samples and order forms can still be obtained from MCA, 1625 Eye Street, N.W., Washington 6, D. C.

New, Low-Cost Process for Separating Zirconium and Hafnium Acquired by U.S.I.

U.S.I. has taken an exclusive option on a new process for separating hafnium from zirconium chloride, developed by the Commonwealth Scientific and Industrial Research Organization of Australia. The separation is necessary where zirconium is to be used in atomic energy installations, since hafnium impurities destroy the excellent nuclear properties of zirconium.

Now in pilot plant stage at U.S.I.'s Cincinnati research laboratories, the process has been found to reduce considerably the cost of separating the two metals. It eliminates the series of cumbersome chemical extraction steps which other methods in current and projected operation employ.

U.S.I. is currently building a zirconium sponge plant in Ashtabula, Ohio, scheduled to come on-stream during the second quarter of 1957.

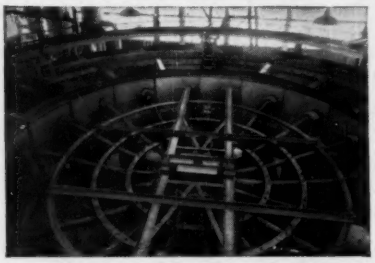
March 23 ★ **U.S.I. CHEMICAL NEWS** ★ 1957

CONTINUED

Phosphoric

Sodium Silicofluoride Produced

Sodium silicofluoride is manufactured as a by-product of the phosphoric acid process. This material is used in fluoridation of municipal water supplies and is also employed by the chemical process industries in the manufacture of enamel frits and laundry sours.



Giant filter is heart of phosphoric acid process at U.S.I.'s new Tuscola, Ill. plant.

New Cancer Studies Show Tumor Growth Reduced by Methionine and Cystine

Researchers investigating the biochemistry of cancer report that methionine and cystine, two sulfur amino acids, have been used to reduce the growth of sarcoma R-1 in experimental animals maintained on sulfur deficient semi-synthetic diets. These compounds also increased body weight as normal tissue, raised food efficiency, as well as increasing the difference in the ratio of normal tissue weight to weight of the tumor.

When guanidoacetic acid (glycocyamine) or glycine were used as further supplements, the addition of methionine overcame the toxicity of glycocyamine and brought about increased food efficiency and a favorable change in the ratio of body weight to tumor weight. The mixture of methionine and guanidoacetic acid was particularly effective in conserving body nitrogen under stress conditions such as the large sarcoma or toxic chemotherapeutic agents.

New Type Polyethylene Film Permits Packaging Liquids In Cardboard Containers

A new pinhole-free type of polyethylene film for liners has just been announced which will make it possible to ship liquid, semi-solid and anhydrous products in bags and boxes as well as drums and barrels. It is claimed that the new film gives positive protection against leakage.

The film is made by fusing together two simultaneous draws of polyethylene while the surfaces are still molten. Since it is almost impossible for pinholes or minute weaknesses to occur in exactly corresponding positions in each of two separate films, the result is a strong, moisture-proof material.

Pinhole-free polyethylene has great possibilities as a lining material for all types of shipping containers—to transport chemicals, dairy products and many other items.



This new container combines a pinhole-free polyethylene bag and a corrugated box. Containers of this type should be of interest for packaging liquid chemical specialties.

TECHNICAL DEVELOPMENTS

Information about manufacturers of these items may be obtained by writing the Editor, U.S.I. Chemical News.

New "blackboard" radiographic method is claimed to be fast and low-cost for industrial x-ray work. Advantages cited include: dry process, reusable plates, detailed images, and 20 to 45 seconds exposure-to-viewing time. **No. 1210**

Paint formulas are featured in new 46-page booklet on pigment extenders, flatting agents and filter aids. Presented on individual, 3-hole punched sheets are 24 formulas for solvent-thinned paints and 17 for water types. **No. 1211**

Imported crystal lattice models now distributed here have angles and dimensions based on data obtained by x-ray and electron diffraction. Linear scale is one Angstrom per 25 mm. Spheres have 20 mm diameter, are varied colors. **No. 1212**

Chemicals which can be piped through flexible polyethylene are charted in an 8-page bulletin on this type of piping. Also covered are properties of polyethylene pipe, sizes, estimated flow rates and installation procedures. **No. 1213**

New arsonosiloxanes are claimed to combine the water-repellent properties of conventional silicones with the fungicidal and pesticidal properties of arsenicals. Suggested for use as water-repellent insecticides. **No. 1214**

Chemically-modified fats known as acetoglycerides have been prepared and patented by the USDA. Some are flexible, wax-like, non-greasy in feel — show promise in foods, plasticizers, cosmetics, lubricants. Process can be licensed without cost. **No. 1215**

New one HP homogenizer said to do jobs usually entrusted to 3 to 5 HP models is now on the market. Designed to process about 1000 lbs. per hour of semi-pastes or other viscous materials up to 30,000 cps, at 3600 rpm. **No. 1216**

An index of all isotopes available commercially, and their sources, can be purchased as a 64-page book listing over 2000 items. Included are stable and radioactive isotopes and hundreds of isotope-labeled compounds. **No. 1217**

1,1,1-Trichloroethane in reagent grade is now available as high-safety chlorinated solvent for the laboratory. Suggested as substitute for chloroform or carbon tetrachloride in dithizone tests for metals because of low toxicity. **No. 1218**

o-Nitrophenyl-beta-D-galactoside of especially high purity can now be obtained which permits a dependable, simple assay of the activity of galactosidase used in studies of protein synthesis. **No. 1219**

PRODUCTS OF U.S.I.

INORGANIC CHEMICALS:

Sodium, Metallic: cast solid in tank cars, steel drums, pails; bricks in barrels, pails.
Chlorine: liquid, in tank cars.
Caustic Soda: 50% liquid, in tank cars.
Sodium Peroxide: dust-free granules, in drums.
Sodium Sulfate
Sulfuric Acid: all strengths, 60° Baumé to 40% Oleum. Also Electrolytic grade to Federal specifications. Tank cars or tank wagons.
Phosphoric Acid
Ammonia: Anhydrous, commercial and refrigeration. Tank cars or tank wagons.
Nitrogen Fertilizer Solutions
Ammonium Nitrate: 83%

OTHER PRODUCTS:

Alcohols: Ethyl (pure and all denatured formulas), Normal Butyl, Amyl, Fusel Oil; Proprietary Denatured Alcohol Solvents SOLOX®, FILMEX®, ANSOL® M, ANSOL® PR.

PETROTHENE® Polyethylene Resins.
Esters, Ethers and Ketones: Normal Butyl Acetate, Dibutyl Phthalate, Diethyl Carbonate, Diethyl Oxalate, Ethyl Acetate, Ethyl Ether, Acetone, Diatol®.
Intermediates and Fine Chemicals: Acetoacetarylides, Dimethyl Hydrazine, Ethyl Acetoacetate, Ethyl Benzoylacetate, Ethyl Chloroformate, Ethylene, Ethyl Chloride, Ethyl Sodium Oxalacetate, U.S.I. ISOSEBACIC® Acid, Methyl Hydrazine, Sodium Ethylate Solution, Triethyl Aluminum, Trimethyl Aluminum, Urethan USP (Ethyl Carbamate).
Animal Feed Products: Calcium Pantothenate, Choline Chloride Products, Curbay B-G® 80, Special Liquid Curbay®, DL-Methionine, Niacin USP, Riboflavin Concentrates, Vitamin B_{12} and Antibiotic Feed Supplements, Vacatone® 40, Vitamin A, D_3 and K_3 Products, Antioxidant (BHT) Products, Special Mixes.
Pharmaceutical Products: DL-Methionine, N-Acetyl-DL-Methionine, Riboflavin USP, Urethan USP, Intermediates.
Metals: Titanium Sponge, Zirconium Sponge, Zirconium Platelets, Hafnium Oxide, Hafnium Sponge.

U.S.I. INDUSTRIAL CHEMICALS CO.
Division of National Distillers Products Corporation
99 Park Avenue, New York 16, N. Y.

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The PROS and CONS of setting up new trade associations for specific chemical commodities

- More research work can be done at lower cost to each member company.
- More promotion work can be done at lower cost to each member firm.
- Relieved of burdens of basic research and general commodity promotion, each member company can concentrate on developing and plugging its own products and processes.
- Association can handle nonproductive chores, e.g., filing and indexing literature, answering general inquiries, sponsoring studies on pollution control.
- Trade association is more effective in public and governmental relations than is possible for an individual firm.
- Association dues are legitimate business expense and sound investment in research and promotion.

- **Companies that have been most enterprising in the field may lose their edge in technology or marketing, and may be billed for work not likely to benefit them.**
- **Association membership at best might tend to blunt individual company initiative; at worst, it might bring risk of antitrust action.**
- **A company that 'farms out' library, reference service, and housekeeping jobs may lose touch or miss out on new developments.**
- **Too many trade associations in the chemical field already; existing organizations should be merged into possibly five or six units.**
- **Association dues are recurring expense that might be more profitably applied to company's own specific development and marketing problems.**

40 Trade Associations: Room for More?

Another trade association in the chemical process field—American Lithium Institute, Inc.—is going into action this week, staging a New York press conference to introduce itself to the trade press and the public.

This brings to approximately 40 the number of trade associations for chemical producers. The question on the lips of many is whether there's room for more new organizations.‡

At least one chemical industry executive (in the Midwest) has been contending that existing trade associations in the chemical domain should be consolidated into five surviving organizations that would be able to carry on more economically and efficiently the functions of all their predecessors.

Three In, One Out: A closer view of this situation is afforded by a look at the whys and wherefores of the American Lithium Institute, organized last fall by three principal makers of lithium metal and compounds: American Potash & Chemical Corp. (Los Angeles) and its subsidiary, American Lithium Chemicals (San Antonio); Foote Mineral Co. (Philadelphia); and Lithium Corp. of America (Minneapolis). The country's only other important lithium producer—Maywood Chemical Works (Maywood, N.J.)—elected to stay out of the alliance.

What were the motivations behind the three companies' decision to set up the institute and the fourth concern's decision to remain aloof?

Obviously, the three participating companies felt they needed a program that was too big for any one of them and which could not be properly attended to by any existing organization. Essentially, the companies' problem was this: in response to urging by the federal government, these firms had been expanding so much in lithium output they felt that a larger, more diversified nongovernmental market was needed to protect their heavy investments in lithium production. They considered it important not to rely too much on their one big customer, the U.S. government; they hoped to find more profitable outlets in new commercial applications.

Costly Research Needed: Such a goal, however, was deemed to require a substantial research and development program, inasmuch as the characteristics and potentials of lithium have never been so thoroughly scouted as those of sodium, another alkali metal. Each company was doing some work of this kind, but wasn't satisfied with results. It seemed that no single company could afford to carry out an adequate program.

This was the situation back in June '55, when the National Research Council brought lithium scientists and producers together for a joint government-industry panel on lithium technology and production. Conversations then and later among officers of the three companies led to organization of the institute last October as a nonprofit Delaware corporation, with its main purpose being to help create new commercial markets for lithium metal and compounds.

The institute was assigned to work along two lines:

- Sponsoring basic research, as in the two projects revealed last Friday†.
- Collecting and disseminating technical and commercial information

‡Latest on the scene: Assn. of Photo Sensitizers (New York), which will promote use of silver-sensitized photo products. It held its first post-organizational meeting last week in Cleveland.

†At Massachusetts Institute of Technology, a fundamental study of lithium alloys, supervised by Professor Michael Bever; at Pennsylvania State University, research on the behavior of the lithium ion in glass, under Dr. W. A. Weyl.

Mississippi River Plant Sites For Sale or Lease



A. Industrial District—1470 acres
B. Industrial Area—1180 acres
C. Residential Area—1750 acres

Riverlands

HEART OF AMERICA'S NEWEST INDUSTRIAL FRONTIER

Industry in 1956 announced plans to invest nearly $400,000,000 along the Mississippi River between New Orleans and Baton Rouge, Louisiana.

Here's Why:

Unlimited industrial water; deep water shipping; vast stores of oil, low-cost natural gas, sulphur and salt; economical electric power; cooperative community attitude; mild, year-round climate; access to markets and sources of supply, both domestic and foreign, and 10-year tax exemption.

Riverlands, a Webb & Knapp, Inc., project in the middle of this area, offers industry:

Industrial districts—Will divide into small and large plant sites. Served by highway, rail, air and deep water transportation. Buildings for lease designed and built to your needs. (The Du Pont Company polychemicals department has purchased 700 acres in Riverlands.)

Unsurpassed housing for plant personnel in new, fully-planned community of 4000 homesites nearby.

Mississippi River Development Corp.

WEBB & KNAPP INC.

383 Madison Ave., New York, Plaza 9-7800
Carondelet Bldg., New Orleans, Express 3434



TRADE GROUP TRIO*: Charter members of lithium institute staff.

on lithium and its compounds and alloys.

'Neutral' Location: First step in putting the institute into business came last September with selection of Marshall Sittig—chemical engineer, then with Ethyl Corp., and author of a *CW* Report on alkali metals (*CW, June 26, '54, p. 41*)—as president. Princeton, N.J., was chosen for the headquarters site. Reasoning: Princeton is near the country's industrial, financial and communications centers; near the member companies' sales offices (but not too near any one member's location); is a university town with library and research facilities; has a ready supply of technical, clerical and part-time help.

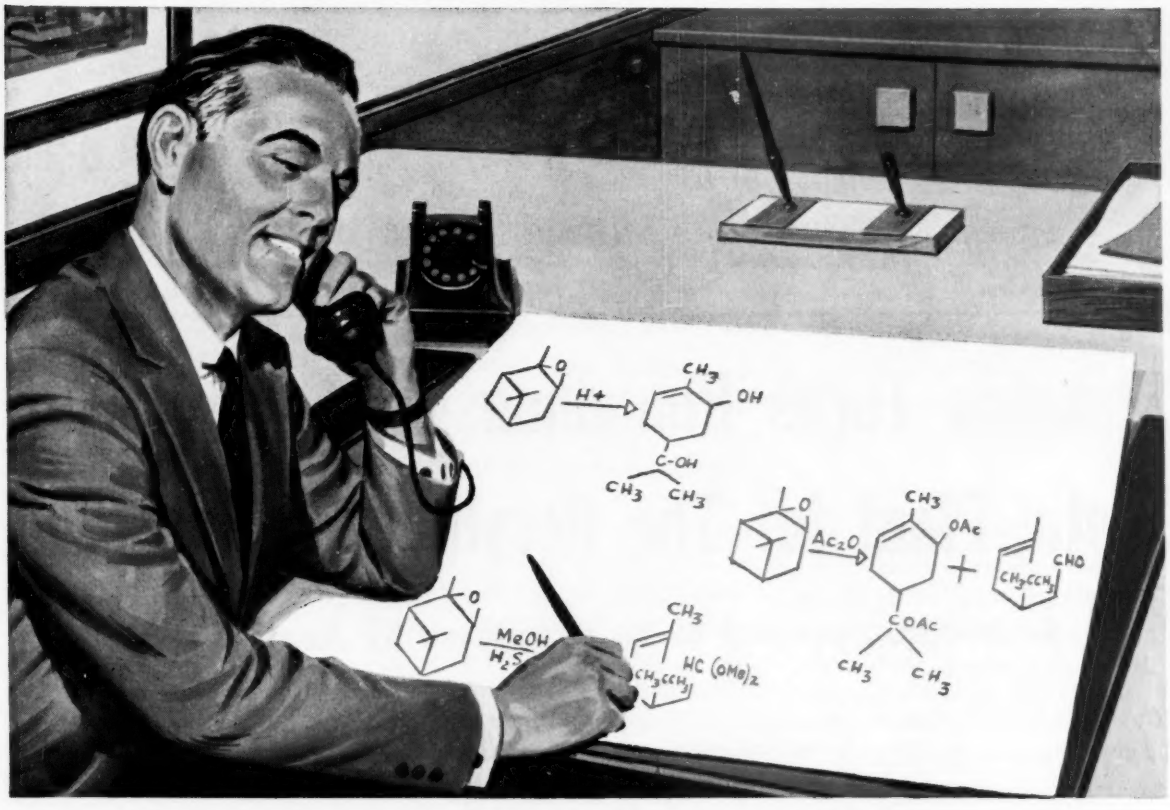
Operating budget is shared by the three member companies on a *pro rata* basis, according to each firm's nonclassified lithium production (in terms of the monohydrate hydroxide).

Guided by a technical committee and a board of directors (in each group, one representative from each company), the institute is to serve as liaison with universities and government agencies, and to cooperate with technical societies on symposia and scientific reports. Example: a forthcoming American Chemical Society monograph on lithium and its compounds. On its own hook, the institute will publish a booklet about lithium, the lithium industry and the lithium institute; and—at intervals not yet determined—a bulletin on recent developments. To steer clear of antitrust laws, the institute will eschew any discussion relating to markets or prices.

Conflicting Views: The three member companies are cheerfully relegating all work on basic research and general technical information to the institute, figuring that they're thus getting a more productive job at less expense. The lone outsider, Maywood, takes a more individualistic stance. "We have been in the lithium business, steadily producing the various products, for more than 50 years," says Maywood President Albert Turner, "and we expect to make use of our knowledge of lithium products for our own objectives."

It's evident that the kind of tasks assigned to the lithium institute would be less needed for old, established chemical products than for new, relatively unexplored commodities. This is reflected in reports that similar organizations have been under consideration by makers of molybdenum, zirconium and possibly other atomage materials. Whether this work can best be done by a new and specific trade association, an existing and more general organization, or by the individual producers is a problem that apparently has to be decided anew in every case.

*Representing principal functions of American Lithium Institute: President Sittig, coordinating research and publicity program; Secretary Edna Hoch, correspondence and records; Librarian Mildred Hunt, technical literature.



Heard the latest about Terpenes?

Becco has epoxidized them! More than five years of research on epoxidation have produced some interesting new products. Dipentene Monoxide and *a*-Pinene Oxide are now out of the laboratory and available, even in drum quantities.

Becco Dipentene Monoxide combines the reactivity of an epoxy group with that of an olefinic double bond in a cyclic terpene molecule. This compound undergoes the usual reactions of the epoxy group and the external double bond in a terpene molecule.

Becco *a*-Pinene Oxide combines the reactivity of an epoxy group with that of the bicyclic system of *a*-Pinene causing it to undergo some unusual reactions. It does not undergo the ring-opening reaction of an epoxide but rearranges in the presence of acid. In water solution, sobrerol is the main product; in anhydrous media, it is campholenic aldehyde.

These terpene oxides have many potential uses as intermediates in the manufacture of perfumes, flavors, pharmaceuticals, protective coatings, insecticides, bactericides, lubricant additives, adhesives, plasticizers, flotation agents, and in organic synthesis.

Typical properties of these epoxides are:

	% Oxirane Oxygen	F.P. °C	B.P. °C	Density at 20°C	Solubility
Dipentene Monoxide	8.9	<—60	74-76 (10 mm)	0.929	Insoluble in water. Soluble in most of the common solvents.
a-Pinene Oxide	9.4	<—60	61-62 (10 mm)	0.963	

Write Becco for experimental quantities and technical assistance in possible application for these compounds. Ask for Becco Bulletins Nos. 81 and 82.

BECCO CHEMICAL DIVISION
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CHEMICAL PROGRESS WEEK APRIL 8-12

Progress in Peroxygens **BECCO**

fmc FOOD MACHINERY AND CHEMICAL CORPORATION ®

FMC CHEMICALS INCLUDE: **BECCO** Peroxygen Chemicals • **WESTVACO** Phosphates, Barium and Magnesium Chemicals • **WESTVACO** Alkalis, Chlorinated Chemicals and Carbon Bisulfide • **NIAGARA** Insecticides, Fungicides and Industrial Sulphur • **OHIO-APEX** Plasticizers and Chemicals • **FAIRFIELD** Pesticide Compounds and Organic Chemicals

LUMMUS

ENGINEERS AND CONSTRUCTORS FOR INDUSTRY

385 Madison Avenue New York 17, N. Y.

Lummus Turns Roundhouse into Beryllium Metal Plant for The Beryllium Corporation

$4,000,000 project to be completed by August 1957

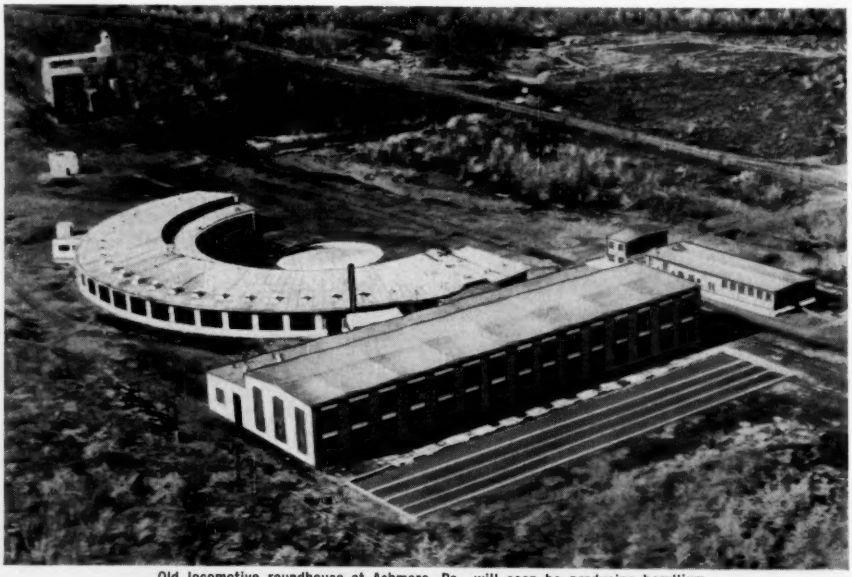
On September 6, 1956 Lummus began initial process engineering and design of a $4,000,000 plant to extract beryllium metal from beryl ore. Scheduled to start operation on August 6, the new plant over the next five years will produce 500,000 pounds of the light metal — all contracted for by the A.E.C. Beryllium is used extensively in atomic reactors where it is an excellent moderator and neutron reflector, because of the small mass of its nucleus and its low affinity for slow neutrons.

Last year The Beryllium Corporation acquired a 2000-acre tract of land at Ashmore, Pa., including some old railroad buildings. The company called on Lummus, to design and construct the beryllium metal plant in the locomotive roundhouse.

The Lummus design accomplishes the extraction of beryllium metal from its ore — while giving prime consideration to the health and safety of plant operators.

The ability to meet difficult and unusual design, engineering and construction requirements is one reason why more and more metals and chemical producers are engaging The Lummus Company to handle their new plant projects.

THE LUMMUS COMPANY, 385 Madison Avenue, New York 17, N. Y. Engineering and Sales Offices and Subsidiaries: Houston, Montreal, London, Paris, The Hague, Bombay. Sales Offices: Chicago, Caracas. Heat Exchanger Plant: Honesdale, Pa. Engineering Center: Newark, N. J.



Old locomotive roundhouse at Ashmore, Pa., will soon be producing beryllium metal for use by the Atomic Energy Commission

Washington
Newsletter

CHEMICAL WEEK
March 23, 1957

Federal agencies looking for more scientists, engineers, and other specialists will get some real help in filling their needs from President Eisenhower and Congress. You can see this in the bolder approach that's being taken by administration and congressional groups concerned with personnel problems. They're talking tough in Congress over the "pirating" by businesses of Defense Dept. scientists, university researchers.

Most of the proposals are too ambitious, too costly, to get very far this year, particularly with Congress talking budget cuts. But bills are being drafted and plans are moving ahead for a full-scale review—with a drive for legislation next year.

Action may come this year on a few suggestions. Already getting strong backing are two bills. One would allow prospective recruits campus-to-job-site trips at government expense, as well as family moving expenses, if hired. Private industry, under a recent ruling can't consider such moving charges as normal business expenses. Graduate training courses for government scientists, with free tuition, are proposed in the other bill.

But the big effort will be broader. Look at these proposals, now starting to flow from various study groups, that will make headlines:

- Pay hikes—running from 10 to 50 %—to put federal professionals on an equal footing with industry colleagues. A handful of agencies won big salary boosts last year for a limited number of such workers. Now House and Senate civil service leaders are pushing bills applying higher pay scales to all professionals in all agencies.

- Special help for the military. An 11-man committee under GE President Ralph Cordiner will soon propose substitution of merit for length of service as a reason for promoting enlisted men; it will suggest setting up a flexible pay and bonus system for those with skilled jobs, a boost in salaries for officers holding heavy administrative loads and pay hikes—averaging 12%—for the Defense Dept's. civilian professional employees.

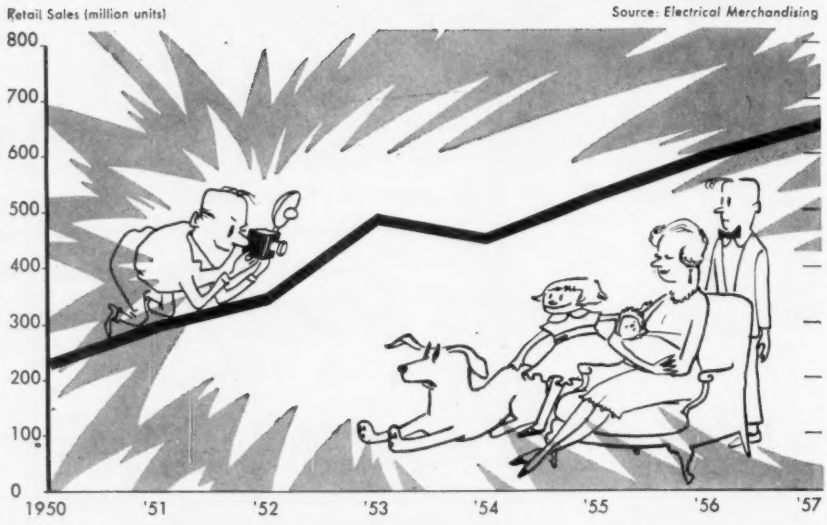
- An overhaul of the Civil Service System—with wholesale job reclassification. A White House group is reported thinking along these lines. It would stress pay incentives, more flexible hiring practices.

The Patent Office would be a big beneficiary, since it employs hundreds of scientists and engineers as examiners. Bills have been drafted to raise examiners' salaries from the present $4,880-$11,610 range to a shade below the $5,250-$20,000 paid for comparable jobs and experience in industry. And there's a move afoot to add the Patent Commissioner and three top aides to the list of officials who are getting major salary advances as a result of last year's executive pay law.

Commissioner Robert Watson wants to leave, but can't find a replacement who'd take the job at the current salary.

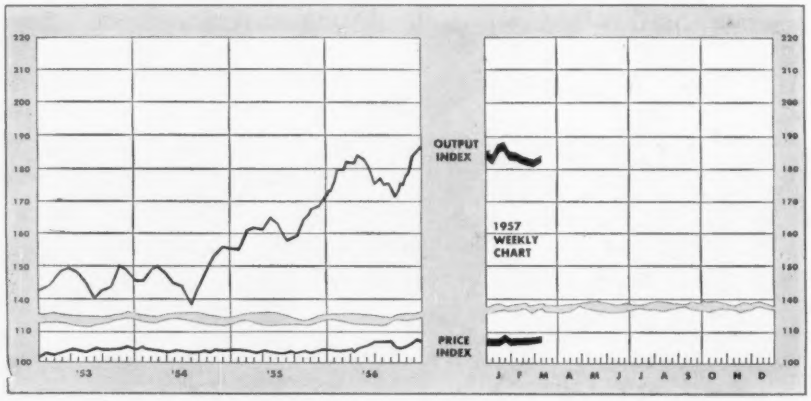
Charting Business

CHEMICAL WEEK
March 23, 1957



Flash Bulbs Brighten Chemical Sales

PHOTOGRAPHY enthusiasts last year boosted sales of flash bulbs to a record 595 million units with a retail value of $83 million. Bulb sales this year are expected to hit $115 million with ease. This highlights the growing market for chemicals used in producing these bulbs—chiefly zirconium, isobutyl methacrylate, aluminum, lead, copper, potassium perchlorate, cellulose acetate, and such solvents as isobutyl ketone, amyl acetate. Sales will go up as bulb consumption does. And by 1960, production should be up 70% from '56.



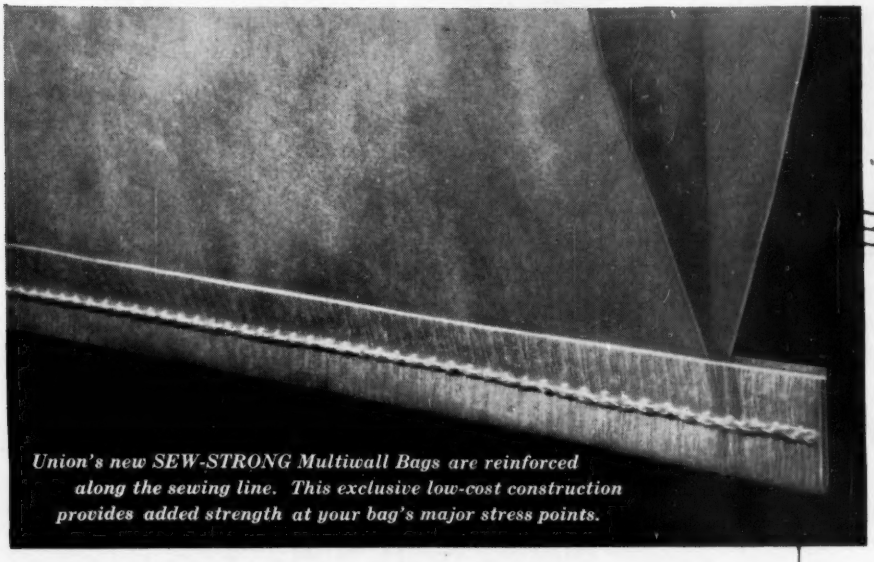
Business Indicators

WEEKLY	Latest Week	Preceding Week	Year Ago
Chemical Week Output Index (1947-49=100)	184.7	184.4	183.0
Chemical Week Wholesale Price Index (1947=100)	108.7	108.7	105.7
Stock Price Index of 11 Chemical Companies (Standard & Poor's Corp.)	41.61	41.89	51.07

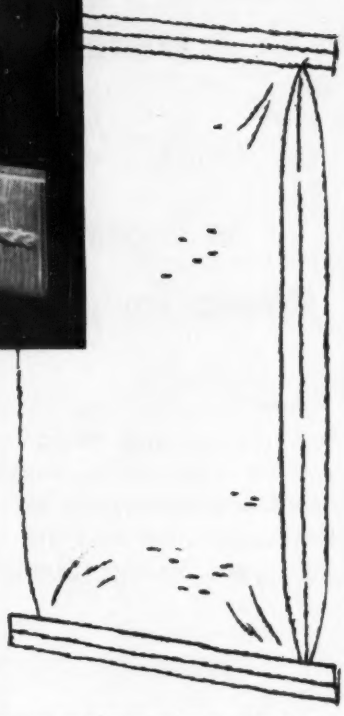
MONTHLY INDICATORS—Wholesale Prices (Index 1947-1949=100)	Latest Month	Preceding Month	Year Ago
All Commodities (Other than Farm and Foods)	125.5	125.2	120.6
Chemicals and Allied Products	108.8	108.7	106.4
Industrial Chemicals	123.2	123.5	119.9

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Union's new SEW-STRONG Multiwall Bags are reinforced along the sewing line. This exclusive low-cost construction provides added strength at your bag's major stress points.



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Tests prove SEW-STRONG's economy

Union has drop-tested many types of Multiwalls. The results have been measured in *safe-inches-of-drop-per-dollar-spent*. Ask your Union Multiwall salesman to show you these comparative figures along with actual field tests. Both clearly demonstrate the extra value you receive in Union's new SEW-STRONG multiwalls.

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Union Bag-Camp Paper Corp.
Multiwall Division
233 Broadway, New York 7, N.Y.

Please have your representative call to demonstrate and explain Union's new SEW-STRONG Multiwall Bag.

Name_____ Title_____

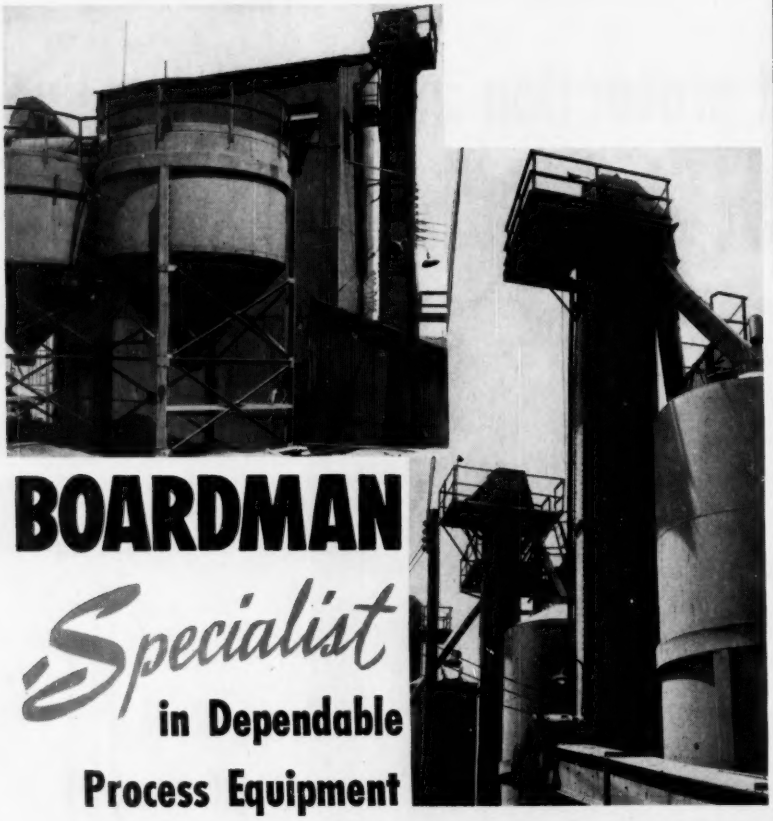
Company_____

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City_____ Zone____ State_____

Principal products pgd. in Multiwalls_____

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LEGAL

Becalmed in Secrecy: Monsanto Chemical Co.'s suit against a former employee engaged in building an electric furnace for phosphate reduction has become becalmed in a sea of semantics.

Main question with industry-wide significance: What is a secret?

U.S. District Judge Sherman Christenson, Salt Lake City, was scheduled to deliver an interrogation decision last month on whether Monsanto must divulge the nature of "secrets" an engineer allegedly has put to use in construction of a competitive facility. But the judge found everything so secret he was unable to make a decision. Trial date: probably next fall.

Monsanto alleges that Charles Miller, a former employee at its Soda Springs, Idaho, elemental phosphorus plant, violated a contract with Monsanto purportedly signed by him while he was an engineer for the firm. The violation is said to have resulted when Miller joined Central Farmers' Fertilizer Co.

The trial will apparently concern the following central questions:

(1) Is it consistent with common law and the rights of an individual to require a man to forever guard any or all information obtained while in pursuit of his scientific occupation with a previous employer?

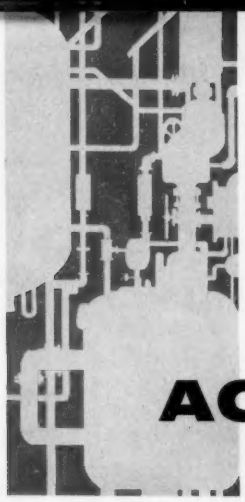
(2) Is the contract between Monsanto and the defendant clear and valid in this respect?

(3) Is such a contract consistent with Utah laws governing trade, control or monopoly of products of the soil?

•

Fluoride Bids: Milwaukee is raising another charge of uniform bidding. The Federal Trade Commission has been asked by Milwaukee Purchasing Agent Joseph Nicholson to investigate three firms' identical bids on supplying sodium silicofluoride to determine whether there has been collusion and a violation of the federal antitrust act.

Blockson Chemical Co. (Joliet, Ill.), Hydrite Chemical Co. (Milwaukee) and McKesson & Robbins (New York) submitted identical $46,800 bids to supply 600,000 lbs. of the chemical. A fourth firm, Milport Chemical Co. (Milwaukee), offered a 1% discount below the same basic bid.



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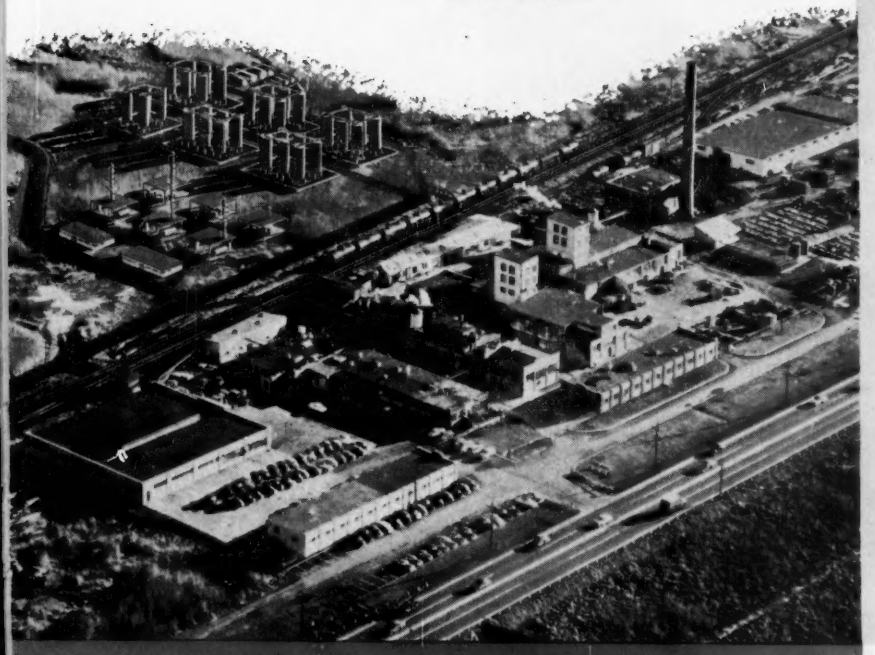
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SCIENCE STUDENTS and others interested in the Canadian chemical industry get first-hand accounts of its past, present and future from company executives.

How to

Here's a technique several Canadian chemical societies have used in a joint "industry popularization" program. The discussions, which will conclude this week, may well serve as an object lesson in promotion to U.S. companies or community-level chemical organizations such as those set up to promote Chemical Progress Week (*CW, Feb. 9, p. 94*).

The program consisted of 10 weekly panel discussions promoting the chemical industry to science teachers, new employees of the industry, economists and brokers.

Topics covered in the discussions: structure of the chemical industry, research, development, engineering, production, sales, technical sales, services, management, a review and forecast. Enrollment totaled 100.

Typical comments:

"It's one way of illustrating that it takes a lot more than boys in white lab frocks to run our industry."

"For a long time, many of us have

PHOTOS BY JOHN LINDER

Win New Friends for Industry



PANEL MEMBER KIRKBRIDE (right) is cornered by one of the program's 100 enrollees.



DISCUSSION LEADER Blaylock explains point on industrial development during intermission.

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JOHN LINDER

NICHOLS, DONALD, WARRINGTON, WRIGHT: Program creators.

been guilty of keeping operating practices a little close to the vest. It was all right to talk about processes, but you weren't to discuss how your company ran its business. We're drifting out of that attitude now—to everyone's advantage."

One of the highlights: a discussion on development (*see cuts*), led by P. W. Blaylock, vice-president in charge of research and development, Shawinigan Chemicals Ltd. Other members of the development panel were William Dunnington, manager of the Development Division, Du Pont Co. of Canada Ltd.; and David Kirkbride, manager of the Development Dept., Canadian Industries Ltd.

The discussions were planned and arranged by representatives of the four sponsoring groups: Robert Nichols, McGill University, course director; J. R. Donald, chairman, Canadian Section, Society of Chemical Industry; C. J. Warrington, president, Assn. of Professional Chemists of the Province of Quebec; and G. K. Wright, chairman, Montreal Section, Chemical Institute of Canada.

LABOR

Struck Plants' Shipments: Recent events indicate that labor unions are not all-powerful in preventing the shipment of products from strike-bound plants. Union Carbide's Linde Air Products Co. division says liquid oxygen is going out steadily—at about two-thirds the normal rate—from its Essington plant near Philadelphia, where workers represented by Oil, Chemical & Atomic Workers (AFL-CIO) have been on strike for nearly two months. And at Linde's Tonawanda plant near Buffalo, where another OCAW local has been striking concurrently, the union asserts that the company has started shipping "sample lots" from the plant, in violation of an agreement that there would be no shipping and no picketing. OCAW began picketing, and this halted construction work in the plant.

At Charleston, W. Va., where train crewmen had been refusing to cross picket lines set up by AFL-CIO Teamsters, a state court recently declared that a railroad or truck line is obligated to carry freight to or from a factory regardless of picketing. Circuit Judge Frank Taylor granted a manufacturing company's request for a temporary mandatory injunction against the New York Central Railroad, ordered Central to restore full service to the struck plant.

•

Data on Demands: What labor unions in the chemical process industries will be seeking in future contract negotiations can be gauged from data on recent settlements and from a speech last week by a knowing unionist. Jack Barbash—research director of AFL-CIO's Industrial Union Dept., with which both of the federation's chemical unions are affiliated—told a union meeting in New York that improved pension plans are to be

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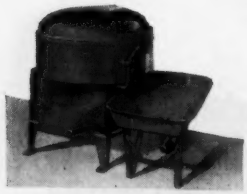
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emphasized in upcoming bargaining. Specifically, he said, unions will ask for increased coverage, higher pension benefits, individual vesting of pension rights, and easing of eligibility rules. Also, he's advising IUD affiliates to try to win comprehensive coverage in medical, dental and hospital insurance, with lower employee contributions.

• At Whiting, Ind., Standard Oil Co. (Indiana) and the Independent Petroleum Workers of America have agreed on a 4% wage increase that may set a pattern for chemical and petrochemical plants in "oil territory", as well as for refineries. OCAW denies that this settlement establishes the 1957 pattern, insists that it will continue to press its campaign for substantially higher wage boosts.

KEY CHANGES

James E. Henning, to vice-president, Bjorksten Research Laboratories for Industry (Madison, Wis.).

Alfred E. Brown, to director of research, Harris Research Laboratories (Washington, D.C.).

James V. O'Leary, to general sales manager, Commercial Solvents Corp. (New York).

Stuart Z. Krinsly, to secretary, and **M. J. Hoover,** to vice-president, Sun Chemical Corp. (Long Island City, N.Y.).

Charles M. Hutchinson, to vice-president, Panogen Inc. (Ringwood, Ill.).

John J. Miller, to general manager, Alumina Division, Olin Revere Metals Corp. (Burnside, La.).

H. Rush Spedden, to director of research, Union Carbide Ore Co., a division of Union Carbide and Carbon Corp.

Langbourne M. Williams, to board chairman, Freeport Sulphur Co.

James H. Moore, to assistant to the president, Metal Hydrides (Beverly, Mass.).

Donald Maclean, to director, Fibreboard Paper Products Corp. (San Francisco).

Arthur W. Weston, to director of research, Abbott Laboratories (North Chicago, Ill.).

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Aluminum Bromide Anhydrous. Technical grade, dark colored product suitable for most manufacturing uses. Highly reactive catalyst, many uses in organic synthesis especially in isomerization, bromination and halogen exchange reactions. Available as solid or lump.

Ammonium Bromide N.F. X. A white powder, very pure, complies with all the requirements of the National Formulary. Commonly used as sedative in pharmaceutical preparations. Also in photography, textile finishing and as fire retardant for fabrics.

Bromine, Dry. A powerful oxidizing and brominating agent used in manufacture of dyes, pharmaceuticals. Many applications in organic synthesis. Low moisture content of 30 ppm permits use in nickel and monel equipment. Very irritating to skin, eyes.

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1, 3-Dibromo-5, 5-dimethylhydantoin. $C_5H_6Br_2O_2N_2$. A bromine carrier and oxidizing agent. Useful in synthesis for side chain bromination and bromination of allylic carbon atoms. A fine stable powder with a minimum active bromine content of 54%.

β - Diethylaminoethyl Chloride Hydrochloride. $(CH_3CH_2)_2NCH_2CH_2Cl \cdot HCl$ (DEC). A granular solid. Specially suited for use as an intermediate in organic chemical manufacture, including antispasmodic agents and other pharmaceuticals.

β - Dimethylaminoethyl Chloride Hydrochloride. (DMC). $(CH_3)_2NCH_2CH_2Cl \cdot HCl$. A granular solid. Specially prepared for use in manufacture of antihistaminics and other pharmaceuticals. Other potential uses in organic synthesis. Relatively nontoxic in hydrochloride form.

β - Dimethylaminoisopropyl Chloride Hydrochloride. $(CH_3)_2NCH_2CHClCH_3 \cdot HCl$. (DMIC). An organic intermediate similar in appearance and properties to DEC and DMC. Specially prepared for manufacture of analgesics and other pharmaceuticals. Other potential uses in organic synthesis.

γ - Diethylaminopropyl Chloride Hydrochloride. $(C_2H_5)_2NCH_2CH_2CH_2 \cdot HCl$ (DEPC). A light tan to white crystalline hygroscopic solid. Used in pharmaceutical manufacture, especially for introduction of the diethylaminopropyl radical.

γ - Dimethylaminopropyl Chloride Hydrochloride. $(CH_3)_2NCH_2CH_2CH_2Cl \cdot HCl$ (DMPC). A white powder of singular purity. A versatile intermediate for pharmaceutical and organic syntheses, available exclusively from Michigan Chemical.

Ethyl Bromide. A clear, colorless, volatile liquid, specially prepared for use as an intermediate in organic synthesis. Practically free from impurities; has a narrow boiling range. Used in manufacture of dyes, perfumes and pharmaceuticals.

Hydrobromic Acid. A clear, colorless or light amber colored fuming liquid. Used for manufacture of inorganic metal bromides, aliphatic bromides, pharmaceuticals, dyes and intermediates. 48% acid and other strengths.

Magnesium Carbonate, Basic, Technical. Fine, uniform white powder, 325 mesh, bulk density 5.5 pounds per cubic foot. Very reactive. Used for rubber compounding, printing inks, paints, varnishes. Anticaking agent for table salt; conditioning or bulking material for powder formulations.

Magnesium Hydroxide. Fine, white powder, typical assay 96.3%, low in moisture, iron, alumina, silica. Technical and NF X grades. Special bulk densities available in NF grade. Convenient material for manufacture of light magnesias, other magnesium compounds.

Magnesium Oxides. Six principal grades of Michigan magnesium oxide with wide range of desirable physical and chemical characteristics covering principal uses of MgO, including rubber compounding, rayon manufacture, ceramics, glass, refractories, insulation.

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Monobromobenzene. Clear, colorless, heavy liquid. Specially prepared for use as an intermediate in preparation of organic compounds. For introduction of the phenyl radical and in Grignard-type reactions. A pure material with a 2 degrees C. boiling range; specific gravity 1.495.

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Potassium Bromate, Granular. A fine, white, granular or crystalline material 99.5% pure. Decomposes at 370 degrees C. with evolution of oxygen. Strong oxidizing agent, used as an analytical reagent. Neutralizer in permanent wave compounds.

Potassium Bromate, Powder. A fine uniform powder with same properties as Granular. Available with added magnesium carbonate conditioning agent when specified. Suitable for use as an aging additive for flour.

Potassium Bromide, N.F. X. Pure, white granular powder. Low in chloride, passes all N.F. requirements. Widely used in the preparation of photographic emulsions, and in lithograhy. One of the most important sedatives. Available in several granulations.

Sodium Bromide, U.S.P. XV. Pure, white crystaline powder or granules. Passes all requirements of the U.S. Pharmacopoeia. High assay; low in chloride. An important nerve sedative. Used in manufacture of other bromides. Contains about 77.5% bromine.

Tetrabromophthalic Anhydride. $C_8Br_4O_3$. High molecular weight phthalic anhydride having a bromine content of 66%. Will undergo most of the reactions of phthalic anhydride. Pale yellow crystalline compound melting point minimum 265°C.

Trimethylene Chlorobromide. Clear, colorless liquid used in manufacture of anesthetic grade cyclopropane. Greater reactivity of bromine atom makes trimethylene chlorobromide specially useful also in preparation of gamma chloro compounds. Boiling range 2 degrees C. maximum.

Zinc Bromide Solution, Optical Grade. Clear, colorless solution, about 80% $ZnBr_2$. Used in laboratories dealing with radioactive chemicals as a radiation viewing shield; the most satisfactory material. Meets all chemical and optical specifications of Argonne National Laboratory.

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C-56-10

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Each year, the American public spends



$194 million for dentifrices, mouth washes and gargles

$75 million for underarm deodorants

$60 million for deodorant soaps

$3 million for systemic chlorophyl deodorants

$2.25 million for foot powders

Sources: *CW;* Toilet Goods Assn.

Newest Target: Clothes

When it introduced its Cyana purifying finish for textiles this week, American Cyanamid joined the ranks of companies making products to aid in the long-time battle against personal odor.

Fastidious Americans, made unendingly aware of what their best friends won't tell them, have been spending more than $330 million/year to eliminate personal odors.

Although reasonably successful in combating body and breath odors, they have been losing the fight in one troublesome area—the clothes on their backs.

Clothes, by picking up perspiration and accompanying odor-causing bacteria, develop odors about as fast as the body itself. But unlike the body, clothes cost money to wash or dry-clean—and repeated treatments wear them out.

Cyanamid isn't the first firm to work on this problem—or to come up with an answer. Many companies offer bacteriostatic agents for textiles, whose effectiveness varies from good to practically worthless. Two of the more widely accepted treatments are those offered by Scientific Oil Co. (Chicago) and Permachem Corp. (West Palm Beach, Fla.). Both are combinations of bacteriostats and fungicides; mildew-resisting qualities are stressed, rather than deodorizing.

No Foe to Fungus: Cyanamid doesn't claim fungicidal properties, but does claim its material is more durable than the other treatments. (It is challenged on this: Permachem claims durability through 10 washings, says its customers tell it this is a conservative claim.)

In home automatic washing machine tests, Cyanamid says, Cyana retained its activity through 25 washes on cotton, 10-25 on a Dacron-cotton blend, somewhat fewer on wool or on most synthetics. Results on dry-cleaned garments, it reports, are about the same.

Resin finishes, acting as binders, raised the durability of the treatment on these fabrics; the concentration of Cyana increased it, too. Normally the new Cyana is applied from a 10% water solution—fabric weight is negligibly increased.

Also claimed for Cyana (and for some of the other treatments):

- It has no effect on the "hand"—i.e., the feel—of the textile.
- It needs no special applying equipment, since it's applied in regular finishing operation.
- It is active against both Gram-positive and Gram-negative bacteria.
- Its activity is not destroyed by heat, light, or abrasive action.
- It has no effect on dye (but Cyanamid says it doesn't know if a treated textile can be stripped and re-dyed or not).
- Applications other than for deodorizing clothes are possible; e.g., hospital sheets and garments can be kept more nearly sterile.

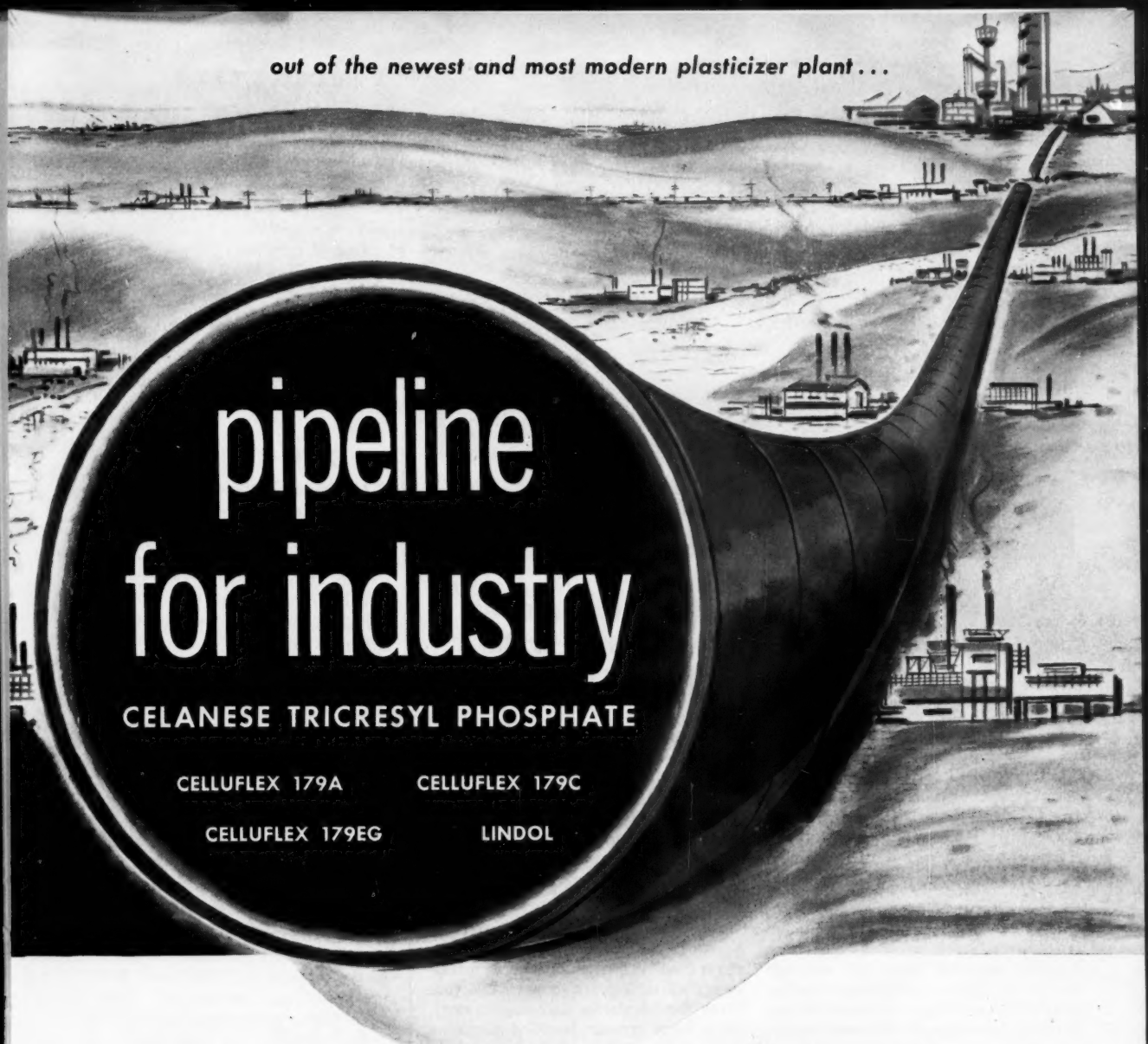
Cyana is supplied as an aqueous solution that is readily dilutable with water. It is compatible with most thermoplastic latices, cationic and nonionic products. It is unaffected by freezing or storage at 120 F, and is nonirritating and nontoxic to the human skin, the company says.

Because its patent application has not yet been granted, Cyanamid won't say what the composition of its material is. Other treatments are either silver (as is Permachem's) or quaternary amines or mercurials. Cyanamid will say only that Cyana is not a mercurial. And the firm is equally as mum about cost, reporting only that it will be "competitive."

New Era Ahead? Cyanamid, encouraged by its test results, feels that a new era may be ahead in clothes care. In one test, the company says, the test subject wore a treated T shirt for seven days while working around the house without the shirt's developing perceptible odor. Cyanamid foresees use in clothing of all kinds, bedding, towels, and even carpets.

Not only could people smell better —or at least, less, the company says— but also, since clothes will be able to go longer between cleanings, laundry drudgery and cleaning expense will be lessened, and the garments will wear longer.

Cyana is being rushed into produc-



volume-produced in four specialized grades to give you the exact qualities you need... plus Flame Retardance!

If dependable supply of Tricresyl Phosphate figures heavily in the efficiency of your plant operation... Celanese, through expanded production at its new Point Pleasant, West Virginia plasticizer plant ... through utilization of strategically located warehouses and terminals... can provide a dependable "Pipeline" to your warehousing or manufacturing facilities. Make Celanese your headquarters for Tricresyl Phosphate—as always it's your most dependable source. Celanese Corporation of America, Chemical Division, Dept. 752-C, 180 Madison Avenue, New York 16, N. Y. Celanese® Celluflex® Lindol®

CELLUFLEX 179A contains lowest ortho content commercially available

CELLUFLEX 179C general purpose grade... provides the best combination of balanced properties

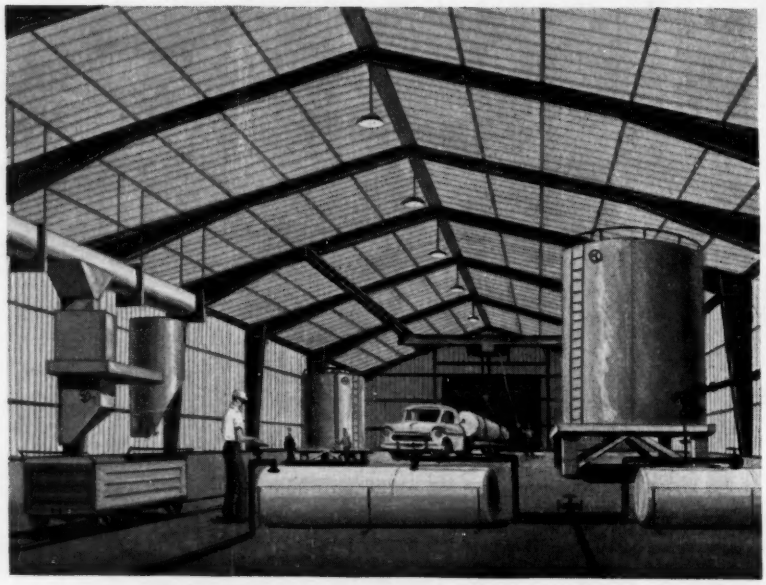
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Export Sales: Amcel Co., Inc., and Pan Amcel Co., Inc., 180 Madison Avenue, New York 16, N.Y.



Chemical men get rugged clear-span design, attractive *Stran-Satin* walls with NEW STRAN-STEEL BUILDINGS

The open, clear-span design of Stran-Steel buildings makes them ideal for the large tanks, vats, and associated piping required for chemical processing operations. In addition, new Stran-Steel buildings have a look of quality never before achieved in an all-steel structure.

Start with the smart *Stran-Satin* finish. *Stran-Satin* metal wall, exclusive with Stran-Steel, provides a strong, durable exterior with the weather resistance of zinc-coated steel. Special protective coatings are available for extreme corrosive conditions. Peaks, gables and eaves are completely enclosed with smart fascia flashing.

Under this attractive exterior is a rugged steel structure. At the peak and knee, the continuously welded rigid frame I-section steel plate beams are securely bolted together. Each frame is also permanently bolted to the foundation.

New Stran-Steel buildings are quickly erected at minimum cost, provide clear, unobstructed space for large equipment, and may be provided with such required accessories as overhead craneways or large access doors. With Stran-Steel buildings, you get the cost-saving features of a pre-engineered structure in a quality building that is fire-safe and easy to insulate. They are available in widths of 32, 40, 50, 60, 70, and 80 feet, and multiples thereof.

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57-SS-25A 24

tion, should be commercially available within a few months. It will be available for mill trials in a few weeks, at which time more price information will be available.

One reason for this speed is the prospect of growing competition for what may well become a multimillion-dollar market. Monsanto, for example, has been doing research on a textile purifying agent, reportedly has its own samples available to textile makers.

PRODUCTS

Urethane Coating: Magna Coatings & Chemical Corp. (Los Angeles) has developed a polyurethane coating for magnesium, aluminum alloys, other ferrous and nonferrous materials. It's called Laminar X-500, comes in gloss, semigloss and flat finish, with green chromate primer.

•

Copper Cleaner: Becco Chemical Div., Food Machinery and Chemical Corp. (Buffalo, N. Y.) is offering a new surface-cleaning process for copper. It employs a water solution (25%) of ammonium persulfate at room temperature, requires a 30-second dip to remove surface films from copper. Retarnishing is said to be considerably retarded by the process.

•

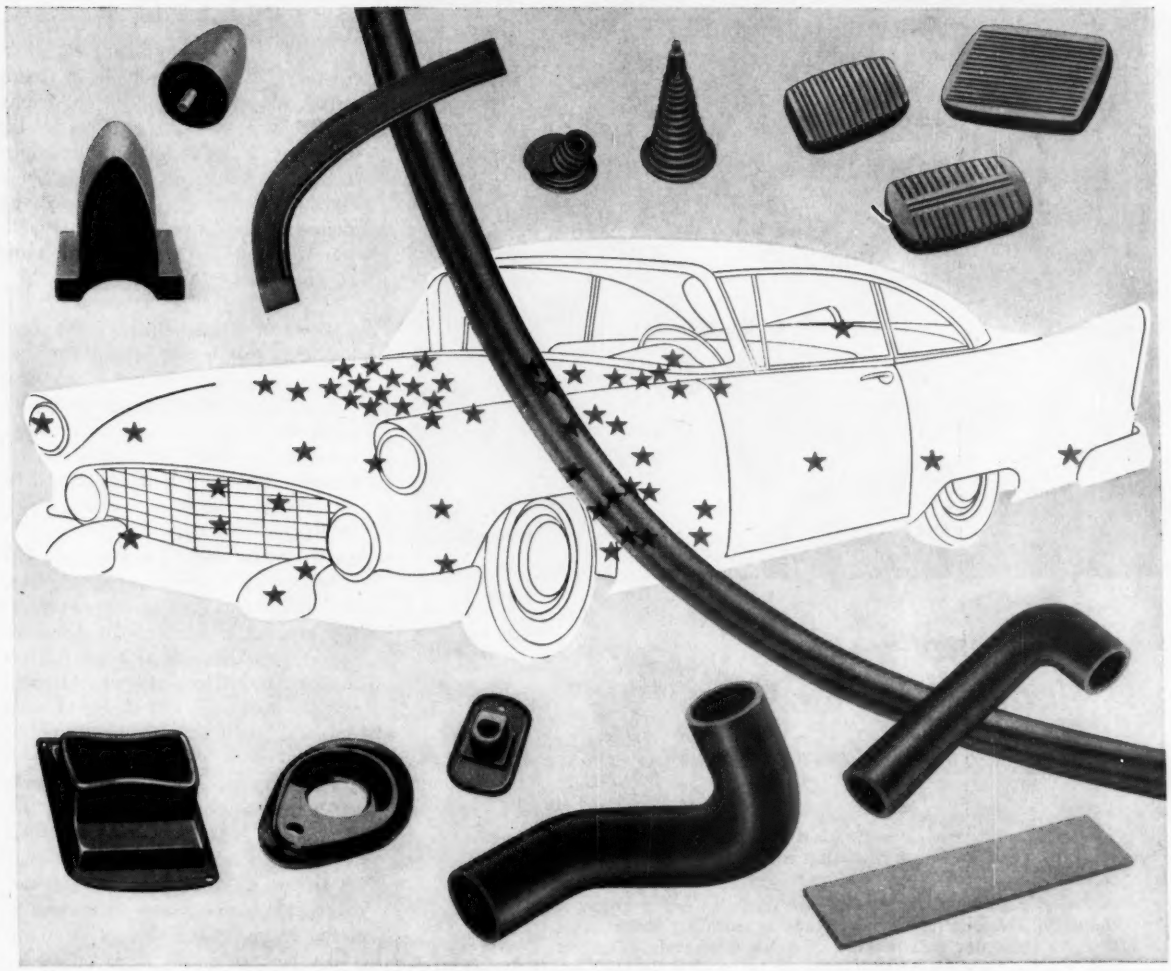
Teflon Tapes: Continental-Diamond Fibre Corp. (Newark, Del.) has marketed a new line of cementable, glass-supported and unsupported Teflon tapes. Both types range from ¼ to 12 in. in width and from 0.002 to 0.060 in. in thickness. They're available with either one or both surfaces treated for adhesion.

•

Stretch Drive: Honey Harbour (North Hollywood, Calif.), maker of the "cold water soap" Woolite, has a new product called Golden Cold-Water Soap. It's made especially for girdles and elasticized garments. A 6-oz. plastic bottle costs $1.50.

•

Mildewcides for PVAc: Key Chemicals Corp. (Miami Springs, Fla.) has brought out two mildewcides developed for use in polyvinyl acetate emulsion paints. Mildewcide XY-10 is a bimetallic organic complex containing mercury and tin. About 1 oz./gal. will control not only mould growth in the can but also mildew growth on painted



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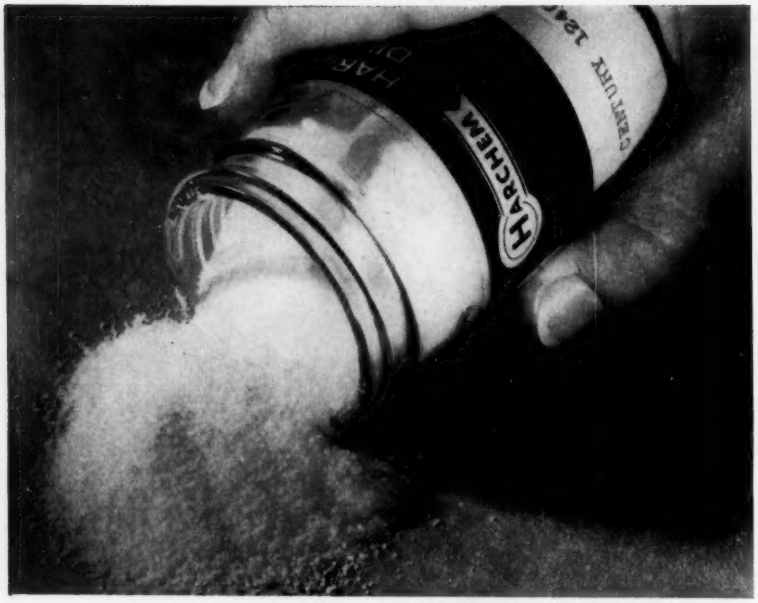
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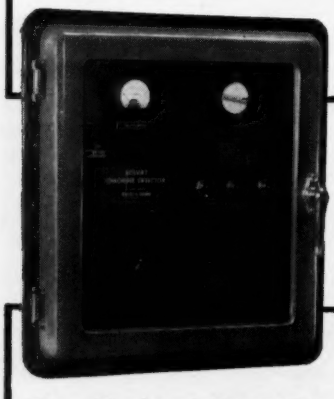
Century Brand fatty acids are made in every grade required by industry. The quality of each grade is carefully maintained to assure that no customer will receive off-grade materials. Harchem Division can supply Century Brand fatty acids in any desired quantities at competitive prices.

Ask for a free sample of the Century Brand *beaded* fatty acids suited for your application. Your requests will be answered promptly.

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H-27



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I-55 *Manufactured under patent license from Solvay Process Div., Allied Chemical & Dye Corp.

surfaces. XY-10 is soluble in drying oils, costs $1.45/lb. in 100-lb. drums. Mildewcide X-10, according to the company, is not sensitive to ultraviolet light, not subject to "fall out" and does not appear to be reactive with pigments containing sulfides. Quantities required and cost are the same as those for XY-10.

•

Protects Brass: Brasslyfe, a one-application protective coating for brass has been introduced by Logo, Inc. (Chicago). Brasslyfe is said to form a hard, durable coating that provides excellent weather- and humidity-resistance. It can be sprayed, dipped or brushed; no baking is required.

•

M.O.A. for OIL: Du Pont has just introduced a new motor oil additive, No. "7" M.O.A. (motor oil additive). The product, a detergent formulation, is added at the rate of 1 pt. per oil change, is said to work well in presence of water, prevent sludge at both high and low driving temperatures.

•

Snap Cap for Tubes: A plastic snap cap for collapsible tubes is being offered by J. Mart Co. (Beverly Hills, Calif.). It consists of two parts—one fits around the tube's cap threads; the cover cap is connected to it with a plastic hinge. Unit will fit a standard collapsible tube with threaded neck.

•

No Buildup: Alpha Molykote Corp. (Stamford, Conn.) has a new refinement of its Type G molybdenum disulfide lubricant. The new product, called Type GX, is said to have a strong affinity for bonding to metal. The secret is in cutting down particle size to bring more molybdenum disulfide in contact with the metal, the firm reports, while a reduction in solid content at the same time minimizes excess surface accumulation.

•

Stability Ability: Ferro Chemical Co. Div. of Ferro Corp. (Bedford, O.), has developed Ferro 1827X, a heat stabilizer for rigid and plasticized polyvinyl chloride. The stabilizer, a free-flowing powder, is a mixed cadmium-barium fatty acid soap with organic inhibitor, is said to impart a high degree of clarity to PVC compounds. Its compatibility with polyvinyl chloride is also claimed to prevent exudation on long-term exposure to strong sunlight.

Expensive Flavoring Oils stay pure...cost less to ship... in Benson Aluminum Drums



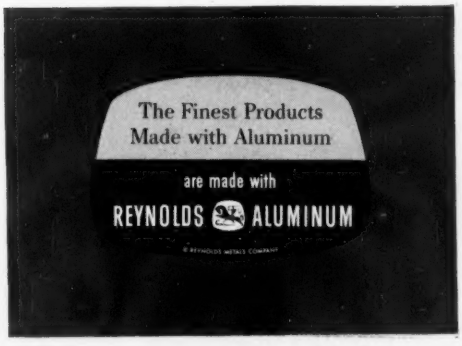
Peppermint and spearmint oils must be kept pure to insure uniform flavor. That's the chief reason why I. P. Callison & Sons, Inc. of Seattle changed from coated steel drums to Benson Aluminum Drums for shipping these expensive oils. They believe, "It will only be a matter of time before the industry adopts aluminum as a standard for drum packaging".

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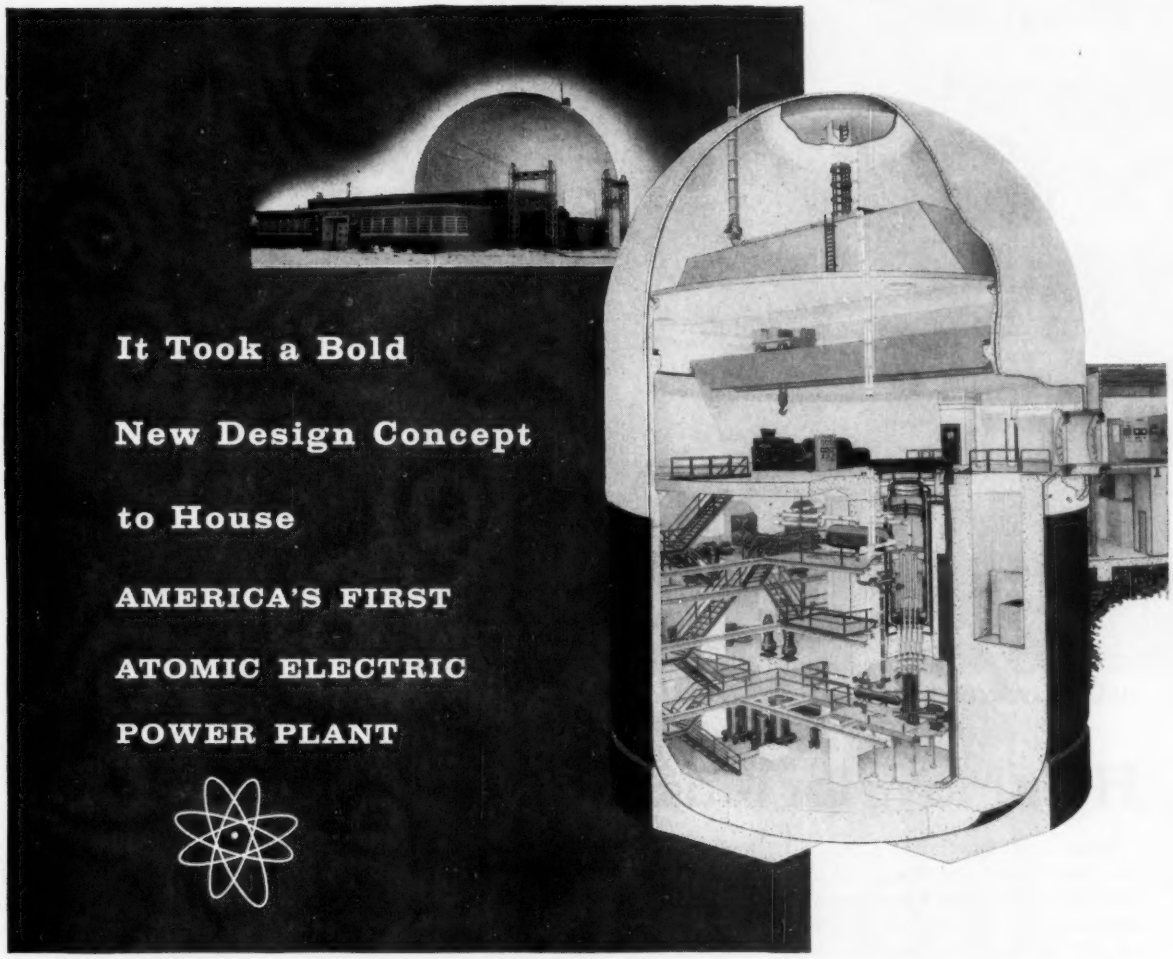
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GRAVER



HELENE CURTIS's Willard Gitwitz and Harold Rosen map out next step in. . .

HC's Move for Mass Markets

What next for Helene Curtis? It was just a year ago March 23 that the Chicago cosmetics maker acquired Jules Montenier Co., manufacturer of the Stopette line of deodorant-antiperspirants. The move made Curtis one of the front-runners in the deodorant field (*see also p. 44*) as well as in the billion-dollar-plus U.S. retail cosmetic industry. And HC, which is just now in its 10th year as a retail cosmetic firm, has made plain that it's still seeking to better its position, still looking for firms or products to take over.

A glance at the past 15 months' activities of Helene Curtis gives some clues to the firm's style of expansion, the kind of firms it buys:

- Dec. 31, '55—acquired "42" Products Ltd. (later sold) and King's Men Toiletries* (colognes, shaving lotions and creams, hairdressings and talc).
- Feb. 19, '56—set up Helene Curtis Overseas Division (sales to U.S. possessions) and Helene Curtis International S.A. (sales to other foreign markets—except Canada).
- March 23, '56—acquired Jules Montenier, Hubbard Products Co. and Hubbard Chemical Co.
- April 10, '56—made its first public offering of stock (375,000 shares at $10/share).
- Sept. 9, '56—introduced Enden, a dandruff-treating shampoo.
- Oct. 10, '56—purchased the Lentheric Division (perfumes, sprays, shampoos) of Olin Mathieson Chemical Corp.

Helene Curtis is even willing to be specific about the future acquisitions it has in mind. Its corporate acquisitions division, headed by Harold Rosen, is looking for new products or companies or both. It needs heavily advertised lines that are concentrated in a few name brands. These few, according to HC, should be able to share a $1-million advertising budget. Also, of course, the products must fit HC's merchandising and sales patterns, lend themselves well to national advertising.

Buying new firms isn't the only way the Chicago cosmetic firm plans to bolster its position. Where it once concentrated on hair products, its field of interest has now spread. King's Men makes the facial products; Stopette, underarm items; and Lentheric, toiletries. And there's a possibility HC may expand into other lines "not necessarily in the cosmetic field." These developments have just taken place: a new cream form of Stopette that features a slotted, dome-shaped dispenser top, and a new package and label for Spray Net.

For the future, HC is thinking of pharmaceuticals and proprietary drugs —as well as hand creams, lipsticks, face creams.

Backward Look: The company's thoughts on expansion into face creams marks something of a circle for the firm. In 1927, its present board chairman, Gerald Gitwitz, found himself partner in a mud pack manufacturing company to which his father had lent money. Unfortunately, the fad for face clays faded and the company turned to the manufacture of beauty parlor supplies. Gerald's brothers, Willard (present HC president) and Joseph (HC vice-president), joined him in this venture, and within two years they were swimming in red ink, owed $73,000. But their company, then known as National Industries, survived, and, sparked by aggressive merchandising, eventually became one of the top suppliers to the beauty supply field. Its name was changed to Helene Curtis in '46. The product line was expanded to include such chemical specialties as permanent wave solutions and the related equipment—waving machines and dryers, curlers, spacers and clips.

In the mid-'40s, although it was racking up big sales to beauty supply houses, the company decided to go into the retail business. Two factors helped precipitate this action: (1) it was evident that women were looking for home products similar to those they could get only at professional salons—many beauty shop operators, as a convenience, were repackaging their bulk supplies for customers to use at home; (2) the introduction, in 1944, of the home permanent kits cast a dark cloud over the future of the professional salon.

Sophisticated Start: Suave, a water-soluble hairdressing introduced in '47, was HC's first product to hit retail outlets. There naturally were some misgivings about the effect of this product on HC's traditional customer, the beauty salon operator, but these fears proved groundless. HC discovered that retail products and advertising actually helped the beauty salon

*Trademarks and patents used by King's Men as well as Montenier are owned by HC's employee profit-sharing retirement plan; the company pays a royalty of 2½% on net sales for their use. In 1964, this will be reduced to 1%.

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CORROSIVE MATERIALS

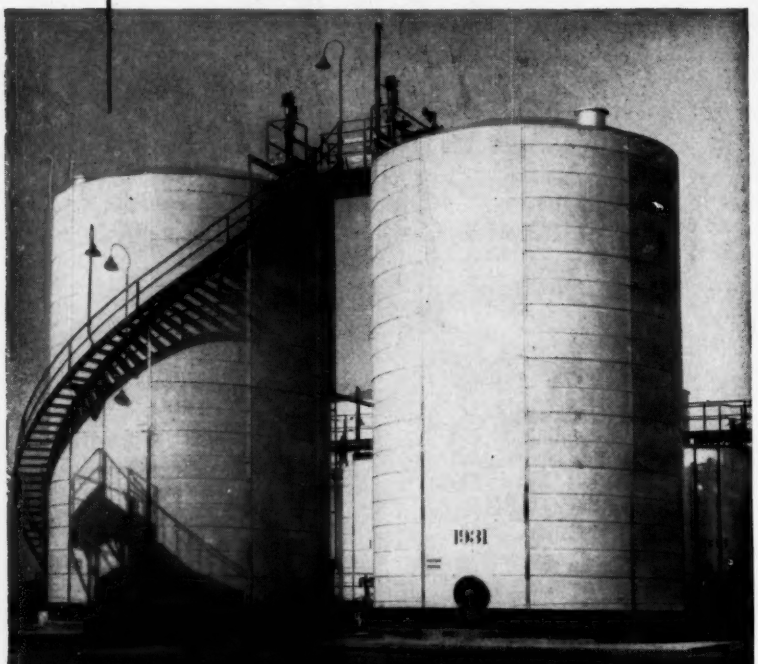
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business. Encouraged by the success of Suave, HC developed more consumer products—Spray Net (a hair fixative), Lanolin Discovery (an aerosol hair conditioner), Shampoo Plus Egg, Suave for Men, and Creme Rinse (an after-shampoo rinse).

Several years ago, toiletries sales were split off as a sales division separate from professional supplies. Comparison of divisional sales shows where the real growth has occurred. Toiletries Division sales in '51 were $2.7 million; these climbed to $19 million in '55. The Beauty Salon Division's sales went from $7.5 million to $10.5 million in the same period. The firm's sales last year were $42.1 million.

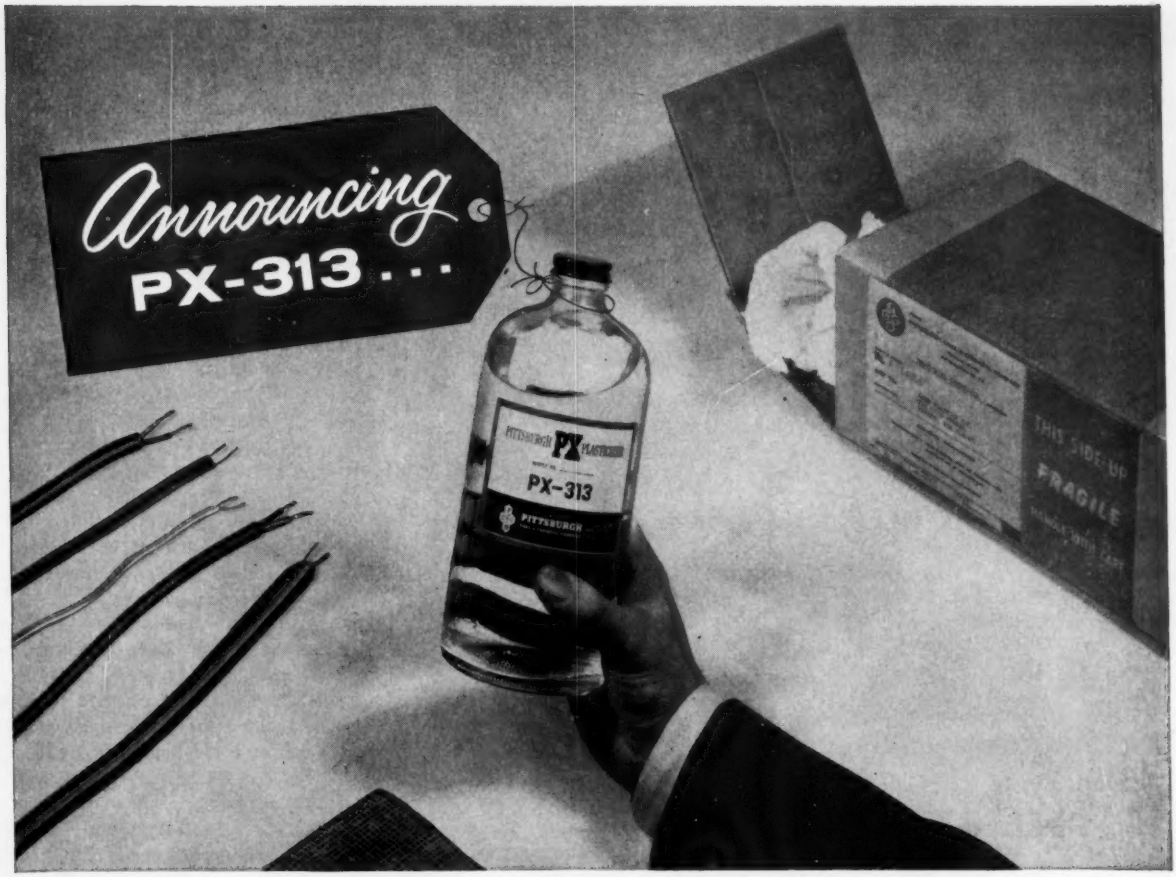
The present breakdown of sales by products: 46% aerosols, 33% shampoos and permanent waves, 16% Suave and Creme Rinse, 5% miscellaneous—including equipment. The specialties are sold through drugstores (48%), food chains (37%), variety stores (8%), department stores and miscellaneous (7%).

With increased emphasis on retail products, HC has necessarily put more money into promotion and advertising, is currently spending more than $10 million yearly—mostly for network TV. In addition, it advertises extensively in magazines and newspapers.

Manufacturing is now chiefly consolidated in the Chicago plant. Switching Montenier and King's Men production has already been completed; Lentheric has almost completely moved from plants in East Caldwell, N. J., and other locations.

Until now, HC needed flexible production lines to switch from one small-volume product to another; with large-volume products, it now can put in specialized and highly automated lines, and realize substantial manufacturing economics. Freight and distribution charges should be lower, too.

HC does some basic chemical manufacturing, makes its own detergents and thioglycolic for cold waves. And although the firm isn't talking about any future acquisitions that it might be considering, it's probably a good bet that it has some in mind. The recent pattern has been for the company to buy established products, and if it is serious about going into lipsticks, pharmaceuticals, etc., some acquisitions may very well be on the way.



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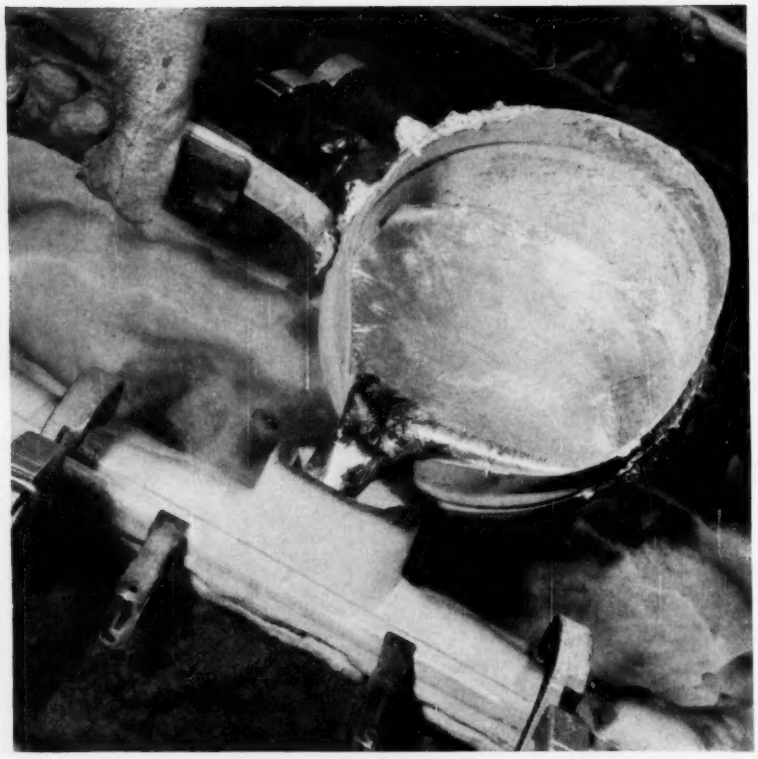
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Rhine Line

These firms are behind the latest specialty developments in West Germany, as reported by *CW*'s correspondent in Bonn last week:

- Cassella Farbwerke Mainkur AG. (Frankfurt) has developed a new group of sulfur-content dyestuffs—called Hydrosols—which Cassella says are water-soluble, need no reducing agent.
- Badische Anilin- & Soda-Fabrik (Ludwigshafen) is producing a new fatty acid condensation polymer—Katioran AF—a cosmetic ointment base. BASF also has developed new blue dyestuffs, Indanthren-Marineblau TR, TRG and TRF, which are extremely water-, light- and ironproof. A new BASF leather preservative is Cortymol X, a cationic, nitrogen-containing compound resistant to alkalis, acids and salt solutions.
- Farbenfabriken Bayer (Leverkusen) is producing a new nonionic liquid, Levapon DNA, claimed to be especially suited for rewashing printed textile and after-treatment of naphthol dyes. Bayer also has developed new dyestuffs for dyeing acrylic and acetate fibers: they are the light and washproof yellow Astrazongelb 7 GLL, and Rapidogengelb N-14 GA, Rapidogen-Goldgelb N-IFGA and Rapidogenbraun N-IBA. A new Bayer nonionic textile dressing agent is Avolan AV, easily soluble in hot water, and resistant to acids and alkalis.
- Bebr. Biulini BmbH. (Ludwigshafen) has developed a new water-treatment compound, Hexatren C5, for use in many textile treatments.

All Summer Long

Lasting weed control—sometimes for more than 10 months—is the big claim for a new granular herbicide from General Chemical Division, Allied Chemical & Dye Corp. It's called Urox Weed Killer, should be available this spring.

It's designed particularly for controlling annual and perennial grasses and broad-leafed weeds in noncrop areas, such as industrial locations, railroad and highway rights-of-way. One application will do the job for a full summer, General says, and a small booster dose will often keep areas weed-free from season to season. The herbicide is a granular formulation of 3-(*p*-chlorophenyl)-1, 1-dimethylurea trichloroacetate.

how Triangle Brand Copper Sulphate



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CHEMICALS
NEW YORK

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as an active ingredient of Bordeaux Mixture sprays and dusts for the control of plant diseases and as an ingredient in fertilizers for copper deficient soil.



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as an algicide to clarify water, and to eliminate root and fungus growths in sanitary sewers and storm drains.

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Triangle Brand Copper Sulphate is a superior wood preservative. Inexpensive—long-lasting. Prevents decay and termite damage.



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as an electrolyte for copper-plating and for coloring metals.

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as a reagent for the oil sweetening process, and as a catalyst in the production of high-octane gasoline.



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as a raw material used in making chemical and other copper compounds.

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as a starting material for making green and blue pigments, such as Brunswick Green, Scheele's Green, etc.



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as a mordant in textile dyeing and calico printing.

BASIC COPPER SULPHATE
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Answers to these questions on edible fats and oils . . .

1. How high a proportion of linoleic acid to saturated fatty acids can a normal person consume without causing a rise in his blood-cholesterol level?

2. What is the effect on blood-cholesterol level of changing the position of the unsaturation in the fatty acid chain?

3. How do *cis* and *trans* isomers of essential fatty acids compare in their effect on blood-cholesterol level?

4. What is the effect on blood-cholesterol level of other nutrients taken in conjunction with fats?

will be the basis for these possible processing changes

1. Change processing procedures in converting edible oils into edible fats. Object: to vary degree of saturation, vary range of essential fatty acids.

2. Adjust emulsification techniques to yield shortening or margarine products that contain optimum amount of linoleic acid.

3. New additives—e.g., antioxidants—could be included in liquid products (containing higher proportion of unsaturates) to impart shelf stability equal to present solid products.

Fats: Heart of the Coronary Problem?

Newspaper and magazine stories* dealing with diet as a possible cause of heart disease are fostering a popular belief that goes something like this: fats stimulate the formation of cholesterol in the body, and a high level of cholesterol in the blood is a forerunner of heart trouble.

Neither supposition has been proved, although the latter offers the single best clue to the cause of coronary heart disease and hardening of the arteries.

Right now, the research involved in following through on this lead is shaping up as one of the major efforts in medical history. Manufacturers of edible fats—whose sales exceed $2 billion/year—are underwriting a good share of these studies.

Moving to step up their research on edible fats are organizations such as the Nutrition Foundation, Inc. (New York); head of this group is Charles King (who is sparking a drive to gather $1 million for the purpose). The National Heart Institute (Bethesda, Md.), whose total 1957 budget is $33 million, will spend substantial sums on edible-fats and related research, according to its director, Dr. James Watt. But a welter of other institutions, associations, universities and industrial firms are playing a part in the project, too.

Early indications are that the more hghly saturated fats (those that are solid at room temperature) cause the formation of high levels of cholesterol in the blood, whereas the more unsaturated fats (liquid at room temperature) do not. As a result, butter, lard, meat fats, hydrogenated vegetable shortenings are being viewed with less favor by consumers than are the oils of corn, peanut, sunflower, etc.

If solid fats do prove to be the culprits, edible-fats makers could change their products and processes to counter the menace. There are

*e.g., "Are You Eating Your Way to a Heart Attack?" *Saturday Evening Post*, Dec. 1, 1956; "Animal Fats Tied to Fatal Disease," *New York Times*, April 17, 1956.



Technical Director Ben Zmuda (left) and Purchasing Agent William M. Fitzgerald depend on Wyandotte for dependable quality and prompt service. Wyandotte products used by Reardon include Soda Ash and Carbose.*

"Wyandotte has a realistic approach to technical service"

Everyone in the building business, and many thousands of home owners, know Bondex—the original, patented, waterproof cement paint made by The Reardon Company, St. Louis, Mo.

Because of the tremendous growth in the use of "sand-finished" products in building, more people buy Bondex and other Reardon products than ever before in its 73-year history. And herein lies a typical American success story that has had a big assist from chemistry.

Read what Reardon's Technical Director, Ben Zmuda, says: "Chemicals play a very important part in the making of our products. They are vital to our future growth and progress. New chemicals, like Wyandotte's Pluronic* series, for example, broaden our base. We are evaluating them as a possible nonionic dispersing agent in solid form.

"Wyandotte has a realistic approach to technical service, too. No magic . . . but down-to-earth co-operation toward getting the maximum benefits from Wyandotte products. This kind of technical service definitely helps get results."

In the words of Purchasing Agent William M. Fitzgerald: "We have enjoyed exceptionally fine business relations with Wyandotte for more than ten years. During this time, Wyandotte representatives have acquired an excellent understanding of our needs and requirements. This is most helpful to us in maintaining high product quality and continuous production in our plants. We know that we can always depend on Wyandotte for prompt delivery, too!"

How about your business? Does your chemical supplier have a good working knowledge of your needs? Perhaps you can profit by calling in the Wyandotte representative and discussing your problems with him. *Wyandotte Chemicals Corporation, Wyandotte, Michigan. Offices in principal cities.*

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these possibilities for changeover:

(1) Change conditions in the conversion of edible oils into edible fats to vary degree of saturation, while retaining required amounts of essential fatty acids.

(2) Vary emulsification techniques to obtain greater unsaturation with as little sacrifice of solidity as possible.

(3) Find new additives (e.g., antioxidants) that will enhance stability of the unsaturated, liquid products.

The Case So Far: Much of the impetus for research in this field stems from data indicating that the United States death rate from arteriosclerotic† and coronary heart disease is the highest in the world. These deaths are predominantly caused by interruption of blood flow to heart muscle, resulting from blockage of the arteries by abnormal deposits of cholesterol combined with fatty acids and protein (atherosclerosis).

Some researchers, notably Ancel Keys, director of the Laboratory of Physiological Hygiene at the University of Minnesota, and Brian Bronte-Stewart, University of Cape Town (South Africa), have come up with theories that certain elements of diet, chiefly fat, when habitually consumed at high levels, may promote development of these forms of heart disease. Specifically, they've raised questions about the relationship between animal and vegetable fats, and the effect of varying proportions of saturated and unsaturated fats in the diet.

Keys' and Bronte-Stewart's findings have tended to focus attention on the role of fats in producing cholesterol.

Tests have been carried out in which rats and other animals are fed controlled diets to determine the effect on blood cholesterol levels. One drawback of animal tests, however, is that they don't necessarily correlate with tests on humans. Those who criticize the use of animals say that even between different animal species, test results vary widely. Many observers, including some meat packers, think research on humans is the only reliable approach.

Nothing but Fat: That's why the work of Laurance Kinsell, director of the Institute for Metabolic Research, Highland Alameda County Hospital (Oakland, Calif.) is attracting a lot of attention. In 1950, Kinsell started feeding volunteer patients nothing but fat emulsions (average of about 2,000 calories/day). He used vegetable fats exclusively because they are liquid at room temperature and are easier to work with. Contrary to his expectations, the cholesterol level in the blood dropped and stayed down during the administration of the high-fat diet. When Kinsell substituted animal fats for vegetable fats, he found that the cholesterol level rose and stayed up.

In further research, Kinsell set out to discover differences between animal and vegetable fats that could account for these results. He found that sterols,* including cholesterol itself, and phospholipids had no effect.

This left only one major entity to be examined—fatty acids. Since 1953, Kinsell has been feeding a group of research patients fats derived from vegetable sources. These fats contain various amounts of unsaturated fatty acids. Safflower oil, for example, has an unsaturated fatty acid (UFA) content of about 80%; coconut oil has practically no UFA content. He finds cholesterol level goes down upon ingestion of safflower, soya, cottonseed, linseed, corn oil, etc.; it does not go down with coconut oil.

Kinsell says: "While there's no question about the effect of vegetable oils and essential fatty acids on cholesterol levels, there should be no implication that all the public has to do is take a couple of tablespoonsful of safflower oil daily to duck heart trouble. Much work still must be done to correlate the effect of unsaturated fatty acids on the cholesterol level with the incidence and severity of coronary diseases."

Animal studies are by no means out the window, however, in edible-fats studies. Bernard Oser, director of Food Research Laboratories, Inc., (Long Island City, N.Y.) reports that his firm relies heavily on animals in its sponsored studies on edible fats. Warns Oser: "Claims that any one form of edible fat is superior to another for physiological reasons are premature."

Still Going Strong: After 18 years, what is probably the longest-term study in the field is still under way at the University of Southern Cali-

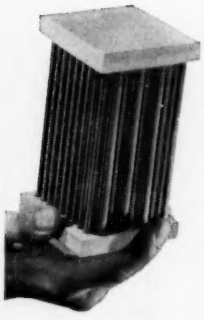
†Arteriosclerosis is the general term for hardening of the arteries. Atherosclerosis is one type of arteriosclerosis.

*On this score, other investigators differ with Kinsell. Eli Lilly & Co. (Indianapolis) is marketing a preparation of beta sitosterols, says they successfully reduce serum cholesterol.

What Edible-Fats Makers Say

'MEAT PACKERS: Right now it can put up fats and liquid vegetable oils without hydrogenation, if required, says **Swift & Co.** **Wilson & Co.** reports it, too, has looked into new products, will unveil them if demand develops. **Armour** says it will continue to support biochemical research (as it has for 30 years), will alter its products as new knowledge demands. **Hormel Institute** reports that research is under way on how and why the essential fatty acids and cholesterol formation are related. (Essential fatty acids, like linoleic, linolenic, are unsaturated, vary as to degree of unsaturation, are considered essential to healthful diet). And the **American Meat Assn. Foundation** states that it is conducting research on animals to determine the influence of fats in combination with protein.

'SHORTENING MAKERS: The flexibility to make any manufacturing changes that may be necessary is claimed by **Procter & Gamble** (Cincinnati). The **National Dairy Council** says it is supporting research on butter, regularly summarizes and reports results to its members. **Best Foods** (Bayonne, N. J.), an important margarine producer, says it has supported considerable research, is convinced—after seeing the results of a long-term feeding study on animals and additional studies on humans—that margarine "is completely acceptable from all nutritional aspects."



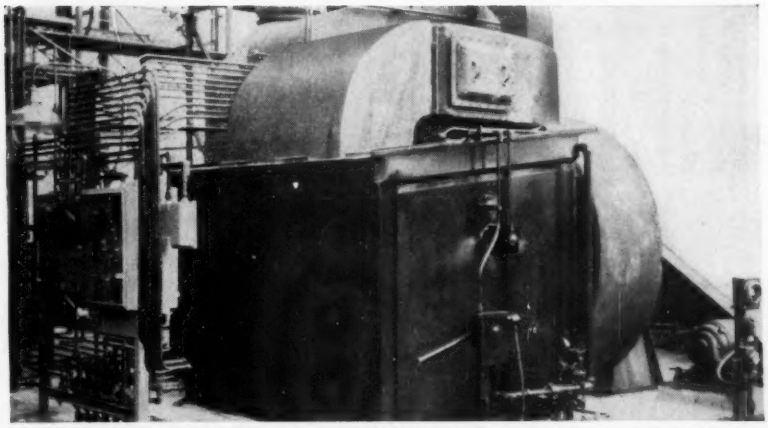
An important message to the man who thinks his air pollution problem is too difficult—or too expensive—to correct

Too often an air pollution problem exists today for one reason only: The company concerned does not yet know there is now at hand an efficient, effective method of correcting it—often at an actual saving through waste heat recovery.

The method is catalytic oxidation, and the firm that makes this development possible is Oxy-Catalyst, Inc.

Catalytic oxidation works by "burning" harmful and irritating combustible contaminants in an exhaust stream at temperatures far below their normal ignition points. It provides close to 100% cleanup of foul-smelling fumes and odors. It reduces fire hazards and maintenance problems by eliminating troublesome condensates in oven and furnace exhausts.

Thus Oxy-Catalyst installations can not only control air pollution. They can also be used to release the latent heat energy in waste and process gases. And they can sometimes do both at once.



Oxycat installation on Standard Oil Company of California's phthalic anhydride unit at Richmond, Calif.

A More Efficient Catalyst

The key to successful catalytic oxidation is, of course, the catalyst itself. Features which make the Oxycat unique are:

- *The combination of platinum and alumina, chosen from hundreds of elements and compounds as the most active and long lasting catalytic agent*
- *The carrier, a high-grade porcelain selected for its strength, chemical inertness, and resistance to high temperatures*
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- *The patented mechanical design of the Oxycat itself*

The result of this combination of features is a catalytic unit with exceptionally long life at high efficiency. Oxycats are strongly resistant to thermal shock—to contaminating agents and clogging. There's no problem of frequent cleaning or reprocessing. Oxy-Catalyst installations are still functioning at high initial efficiency after over 20,000 hours without maintenance or servicing.

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Oxy-Catalyst installations are now working effectively in a wide range of industries—oxidizing combustibles from such processes as asphalt oxidation; phthalic anhydride, polyethylene and ethylene oxide manufacturing; catalytic cracking; and many others.

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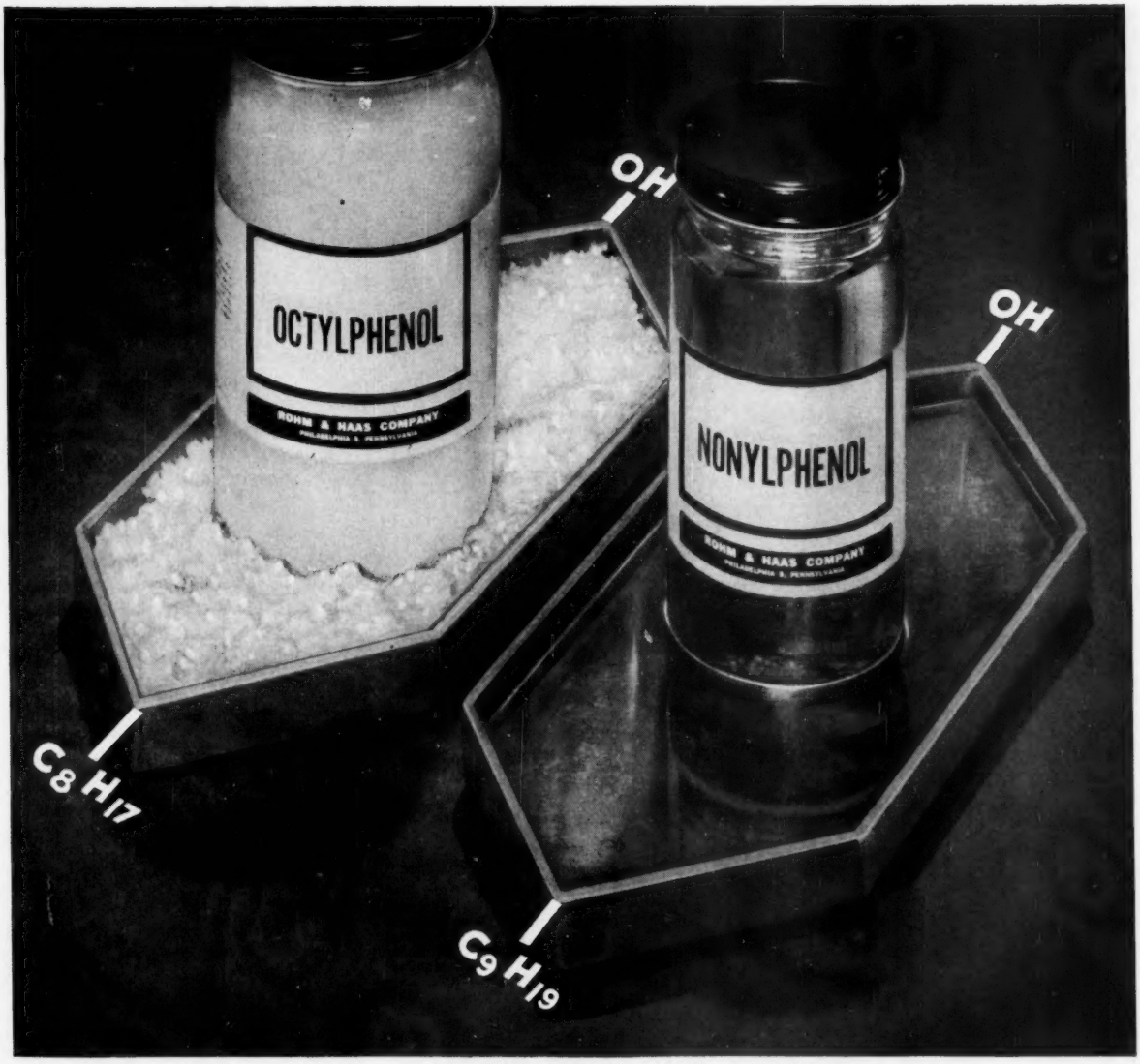
fornia. Originally headed by Dr. Harry J. Deuel, Jr. (who died last April), and now under the direction of Dr. Roslyn Alfin-Slater, the program is concerned with multigeneration and longevity feeding studies of rats. Sponsored by Best Foods, its purpose is to discover all the effects, including the effect on cholesterol metabolism, of hydrogenated vegetable fats in the diet. Test animals are in "excellent nutritional condition."

Although Dr. Alfin-Slater admits some results with animals can't be translated to humans, she feels that lipid metabolism in rats does run parallel to that of humans.

She further believes that the blood



IMR's KINSELL: A tablespoonful of safflower oil is not the answer.



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Chemicals for Industry

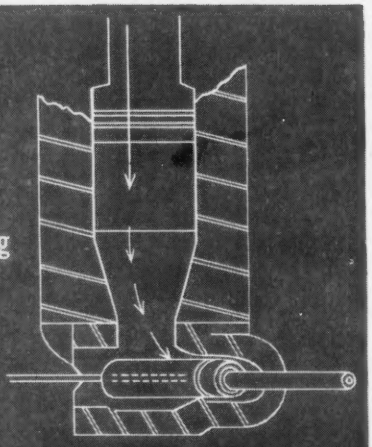
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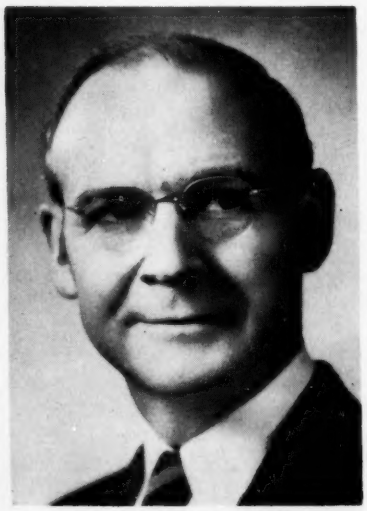
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cholesterol level has no effect on producing atherosclerosis. And here's where her animal tests have an advantage over human experiments. Animals can be sacrificed at various stages to determine cholesterol buildup. With humans, only at death can cholesterol deposits be studied. Cholesterol buildup cannot be observed during a human's life.

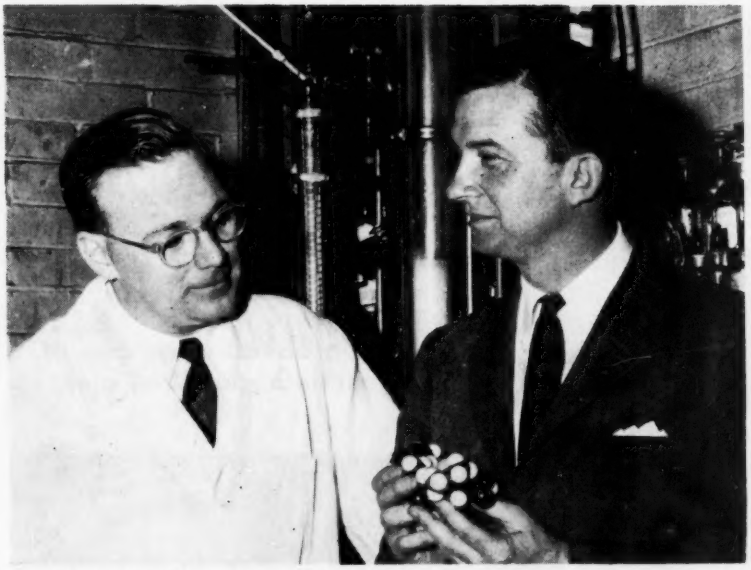
Beside diet, factors such as stress —and even combinations of factors —must be considered. At Harvard Medical School, for example, Dr. Fred Stare, a biochemist active in nutrition research, is studying the relationship of exercise to high-fat diets. He's feeding two groups of monkeys high-fat diets, is trying to determine whether sedentary monkeys get more atherosclerosis than do active ones.

Upon reviewing the entire subject, Dr. Stare holds to a middle-of-the-road course between those scientists who are convinced that low-fat diets are the answer and those who attach no importance at all to this approach. He's critical of some of the original data, maintains that they are based on too few human subjects, that the controls were poor and that the observation periods were too short. He agrees that considerably more research is necessary.

Even with all this research, it may be a long time—5-10 years at least—before the facts are known. The incentives for solving the problem, however, guarantee no letup in the effort.



NFS's KING: $1 million is the goal.



HENERY-LOGAN, SHEEHAN: In aliphatic carbodiimides, the final clue.

Penicillin Pathfinders

In a terse communication to the editor of the Journal of the American Chemical Society last week, two research chemists spelled out the details of what is believed to be the first total synthesis of a natural penicillin.

Achieved (*CW Technology Newsletter, March 16*) by Massachusetts Institute of Technology chemistry professor John Sheehan and research associate Kenneth Henery-Logan, the synthesis is important for reasons other than the notable chemistry involved.

Chief of these is that it opens the door to possible future chemical modification of penicillin to increase the drug's effectiveness against a wider range of microorganisms, including those that have developed resistance. In addition, such chemical tailoring may eliminate another penicillin failing—its allergy-producing tendency.

Sheehan and Henery-Logan synthesized penicillin V (phenoxymethylpenicillin), a form that can be taken orally, is currently made by Wyeth and Eli Lilly via fermentation.

Raw materials for the synthesis are butyraldehyde, glycine, and phthalic anhydride. But there's a long trail of complex chemistry between them and the final product. Sheehan—with coworkers—has been fashioning penicillin synthesis steps* since '48. The final step takes advantage of the ability of aliphatic carbodiimides to form amide bonds in aqueous solution under mild conditions—it involves the cyclization, with N,N-dicyclohexycarbodiimide, of a penicilloic acid to penicillin V.

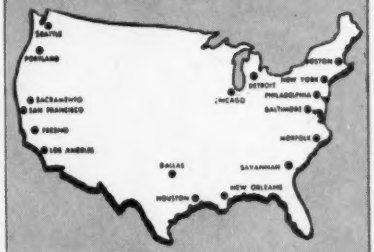
Besides being a total synthesis (there are no fermentation-produced precursors), their achievement has been termed a "rational" synthesis by Sheehan and Henery-Logan, because it might be expected to produce the correct penicillin structure.

Although the work was financed by Bristol Laboratories (Syracuse, N. Y.), the firm isn't laying claim to the synthesis. The MIT team does not expect their synthesis to develop into a commercial process. Current cost of penicillin V, made conventionally, is around 2-3 times that of penicillin G (about 7¢/million units—roughly a gram). But that's still much lower than the drug can be made by synthesis methods.

Practical value of the synthesis will ultimately be measured by the improved penicillin derivatives it promises to sire.

*Including "The Synthesis of Substituted Penicillins and Simpler Structural Analogs. IX. 4-Carboxy-5, 5-dimethyl-α-phthalimido-2-thiazolidineacetic Acid Derivatives" by Sheehan and Philip Cruickshank (*JACS*,78,3677, 1956).

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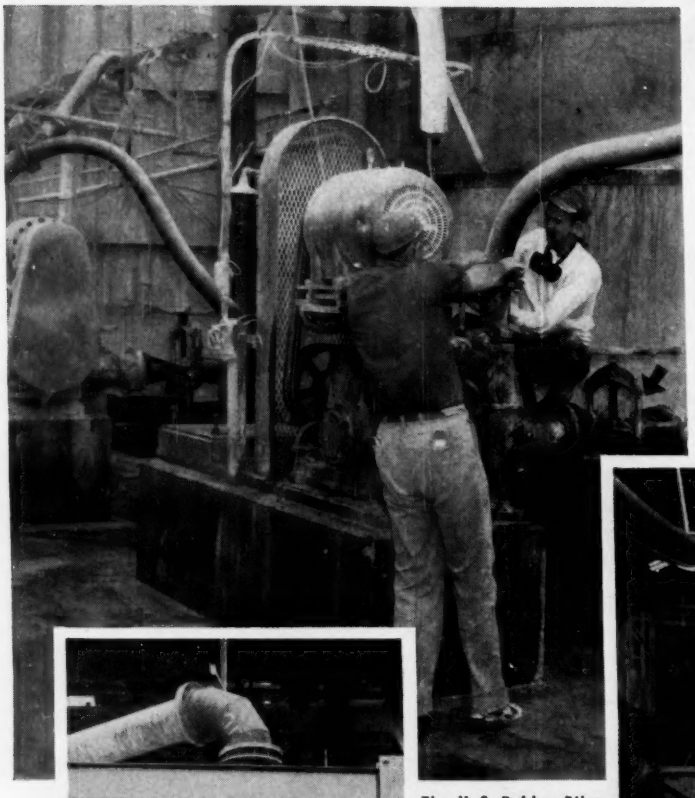
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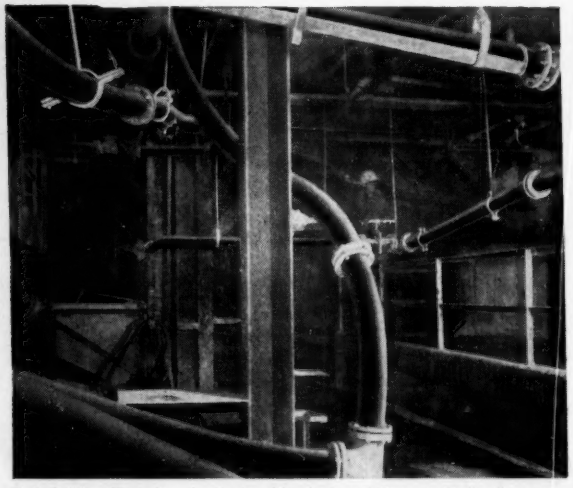
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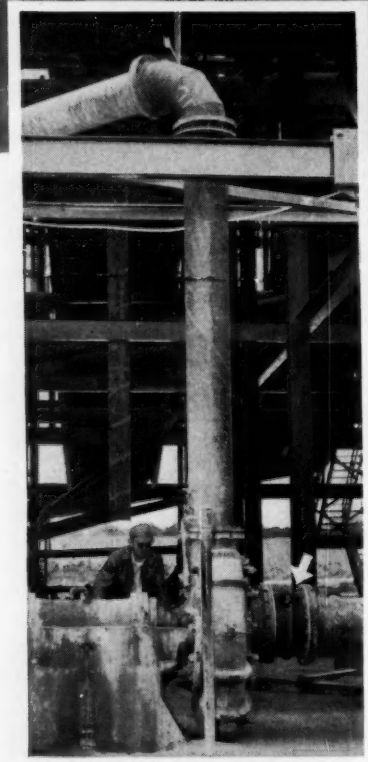
says production official of phosphate chemical plant



The U. S. Rubber Pilot pinch valve (arrow) connects to the big tank in the background (with U. S. Giant Acid Hose at right) and serves to control the flow of acid, gypsum and solids to the digestor tank, from the pump.



U. S. Rubber Pilot pipe, dominates this picture of slurry tanks for first stage filters. Note also U. S. Acid Hose.



U. S. Expansion Joint (arrow) connecting a leak-proof fitting to a vibrating pump in phosphate plant.

This large plant in Florida operates 24 hours a day, 7 days a week, making fertilizer and animal food supplements. Corrosive acids, (phosphoric and sulphuric) flow freely, and without damage, through U. S. Rubber Giant® Acid Hose. "Metal hose would clog, corrode and crack," says the production official of the plant. "We also use U. S. Rubber Pilot® Pinch Valves—because they don't clog, freeze or need to be babied like metal valves."

This plant also uses U. S. Expansion Joints and U. S. Pilot Pipe and U. S. Giant Acid Hose to control, pipe, pump and convey the flowing semi-solid acids. All of these products are easy to install, easy to clean and maintain. The plant's officials have found that U. S. Rubber products are unmatched in facilitating production and in reducing maintenance and equipment charges. They have standardized on "U. S." products. It will pay you to take any and all corrosion problems to a "U. S." specialist. Get in touch with any of our 28 District Sales Offices, or write Mechanical Goods Division, United States Rubber, Rockefeller Center, New York 20, N. Y.

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Technology
Newsletter

CHEMICAL WEEK
March 23, 1957

General Aniline engineers are trying to solve the problems that have come up in operating the firm's high-pressure acetylene derivatives plant in Calvert City, Ky. The plant has run into some technological difficulties, and production there has been halted.

The Reppe chemistry involved in the plant is tricky, of course. Thus, scale-up difficulties should not be completely unexpected, although the firm has a wealth of pilot-plant experience on the project.

•

Dow's Zefran acrylonitrile-based fiber is not a copolymer.

So said G. W. Stanton, director of the firm's textile fiber research, at the Textile Research Institute's synthetic fiber symposium in New York City last week. In clarifying the structure, which has been described previously only as a "nitrile alloy," Stanton put it this way: "The alloy structure is essentially a continuous polyacrylonitrile background which is hydrophobic, containing discrete areas of a hydrophilic dye-receptive polymer. The close packing of the hydrophilic groups provides an atmosphere of the right cohesive energy density for tightly complexing dye molecules not provided in a copolymer."

As he sees it, the alloy type structure better exploits the heat-resistant nature of polyacrylonitrile and the hydrophilic nature of the other polymer. The hydrophilic portion is believed to be polyvinylpyrollidone *(CW Technology Newsletter, Sept. 8, '56).*

•

Upjohn's streptovaricin has an 8-month clinical test ahead to check its effectiveness for tuberculosis patients who still have lung cavities after treatment with other drugs. The new antibiotic *(CW Technology Newsletter, Feb. 22)* has indicated a "remarkable" ability to potentiate the effect of other drugs on tubercle bacilli in animal tests, although early clinical tests had not indicated any unusual results when it was used alone.

The new tests will be run in 10 hospitals on 100 patients using the antibiotic in conjunction with isoniazid therapy. The goal is to find out whether development of TB germ resistance to isoniazid can be slowed.

Upjohn has described streptovaricin as a mixture of at least five chemically distinguishable components—of which the "C" component is far more effective than the others.

•

A news story out of St. Louis last week reported a "breakthrough" in polyurethanes, implied that Mobay was going to make polyether (rather than polyester) urethanes. Says Mobay: We have not yet decided whether or not to make the polyethers.

Technology
Newsletter

(Continued)

A plant with an unusual electronic control system started up last week in the Jersey meadows when Truland Chemical (an affiliate of Trubek Labs) made a trial run in its new distillation plant (*CW, June 23, '56, p. 58*). It is electronically controlled and actuated in its entirety, doesn't use any pneumatic elements at all. Though lots of plants are stressing electronic instrumentation, Truland is going farther—it even controls valve positioning by electronics.

Dan Friedland, designer of the plant (and the -land in Truland), following a 36-48 hour run on acetone, reports: "The complete absence of lag apparently pays off handsomely in the product purity. We made 0.2 C acetone." (Commercial specifications for acetone from two big producers are 0.8 and 1.0 C respectively.)

•

Two new electron accelerators will be built by Britain's atomic energy research station:

• One, at Harwell, will have a power input of 36 megawatts which will be fed into the machine through six klystron valves of the type used in radar. It will develop energies of the order of 28 million volts and will produce neutrons by bombarding uranium. Its aim: to develop information about the behavior of the uranium and plutonium nuclei and thus facilitate the development of reactors.

• The other, at Wantage, will be used to study radiation applications, in food and drug sterilization and other chemical processing problems.

In addition, Harwell scientists are designing a new type of proton accelerator that will produce energies of the order of 6-7,000 volts.

•

The "strongest heat stable silicone rubber ever developed" is being introduced by Dow Corning. It says that the new material (Silastic 916) has all the thermal stability and high dielectric properties typified by the silicones, but with a mechanical strength and abrasion resistance closely approaching that of organic rubber.

Available in pilot-plant quantities, the rubber is suitable for applications over the temperature range —130 to 500 F, is said to be easily processed. Applications Dow Corning is shooting for: stove door gaskets, aircraft door seals, wire and cable coatings and oxygen masks.

A million degrees temperature for one ten-millionth of a second. That's the record Alan Kolb of the Naval Research Lab reported, while telling the Nuclear Congress about experiments with a small quartz tube filled with deuterium.

Researchers at the University of Chicago, meanwhile, report they've developed a temperature of 11,250 F in a new water-stabilized electric arc that can be used in laboratory studies.



FIRST COST

The BIRD requires *no* expensive vacuum or filtrate pumps, *no* complicated slurry feed system, nor complicated controls. Floor space savings are often substantial.

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The BIRD is shipped as a completely assembled, self contained unit, and can be simply dropped onto its foundation. All that is then necessary is to hook up the feed line and provide means for carrying away filtrate and solids. Installation is a cinch compared with other equipment.

MAINTENANCE COST

The BIRD requires no operator — no watching. Available in sizes that avoid necessity of extreme speeds. This means lower power consumption.

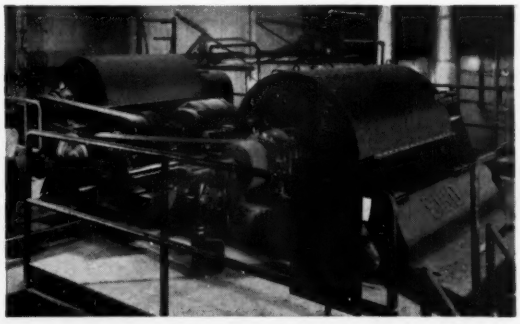
OPERATING COST

The BIRD often runs for years without major overhaul or parts replacements — nothing beyond routine lubrication.

The Bird Research and Development Center helps to obtain pilot scale test data on cost as well as performance. Why not get the facts and figures in advance of your investment in filtration equipment.

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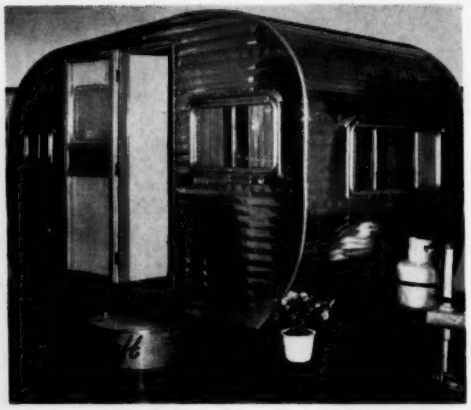
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- Bird Continuous Centrifugal Coal Filters • Bird Polishers
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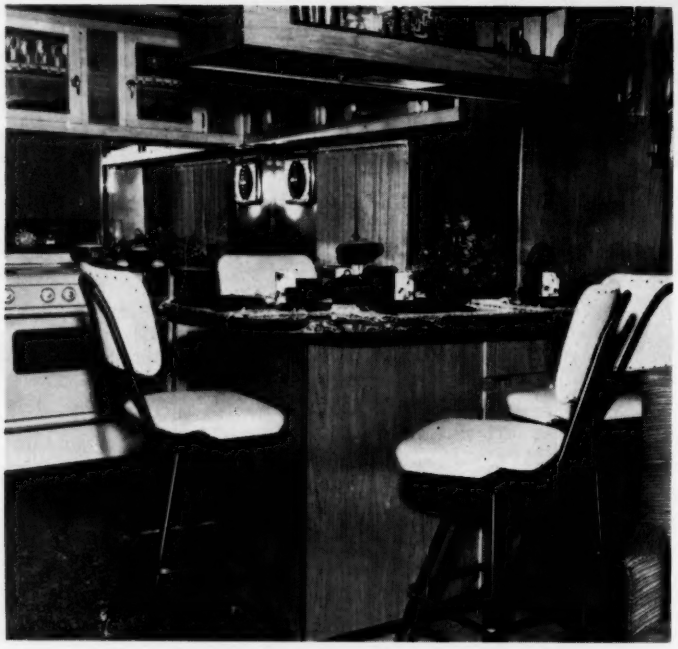
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MOBILE HOMES: Big units for low-cost, year-round housing; small ones for vacationing vagabonds. Efficient and attractive styling leans heavily on plastics, aluminum, enamels.

Rolling Market for Chemical Products

Some 3 million American nomads are the force behind a booming business in mobile homes that last year topped $500 million on the retail level. The success of this industry—1 million units are in use—can be attributed largely to chemical and allied products that help make homes-on-wheels attractive to so many buyers.

How chemical products—because of their sales-stimulating eye-appeal, economy, and general utility—have helped expand mobile home sales was evident to observant dealers and prospective buyers who trooped through more than 250 trailers that were exhibited at the 20th Annual National Mobile Home Show in New York's Coliseum.

Plastics are used in many ways, of course, and reflect the styles and construction practices used in the building of conventional homes. Some enthusiastic proponents of mobile homes say that their industry is a step ahead of regular housing in the use of new materials and efficient, space-saving design.

Vinyl floor coverings, for example, are popular, although other commonly used materials (e.g., linoleum, asphalt tile) still retain a good share of this market. Other uses for plastics include walls and countertops in bathrooms and kitchens, folding doors, drawers of Bakelite, wall insulation of Styrofoam (and fiberglass), polyethylene for vapor curtain barriers.

Some manufacturers reportedly are installing plastic bathtubs, but these items have not yet attained general acceptance. Lightweight steel tubs finished with enamel are still preferred by most manufacturers.

In general, the interior design of a mobile home isn't likely to be much different from that of a conventional home; similar construction materials are used, but weight-saving is, of course, an important factor in the selection of materials.

Exteriors of mobile units differ more from conventional housing because of the almost exclusive use of aluminum; steel is sometimes used for roofs, but even then outside walls are likely to be of aluminum.

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Four Uvinul stabilizers, which differ in solubility and range of ultraviolet protection, are now available, permitting users to select the product best suited for their needs.



Blended with polyester resins, Uvinul stabilizers prevent discoloration and deterioration in sunlight.



Uvinul absorbers incorporated into sunglasses or safety glass filter out UV radiation, which is harmful to the eyes.



Uvinul absorbers added to coatings or finishes for natural or synthetic fibers, leather, paper, and similar materials protect the substrate.



Colorless transparent cellulose acetate sheets containing Uvinul absorbers protect display merchandise, photographic prints and UV-sensitive chemicals.



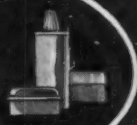
Uvinul stabilizers increase the shelf-life of cosmetic liquids, creams and pastes containing perfumes and dyes.



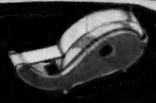
Uvinul absorbers blended into polymethylmethacrylate sheets stabilize the resin and protect interiors when this material is used for glazing.



Uvinul absorbers added to lacquers retard color change in many natural and chemically-treated furniture woods.



Uvinul absorbers may be formulated into waxes, polishes, oils, creams, and aerosols to increase the effectiveness of these protective coatings.



Uvinul stabilizers added to pressure-sensitive adhesives increase the life of the bond as well as of the backing strip.

THESE ARE BUT A FEW OF THE MANY USES OF THE UVINUL ABSORBERS. MORE DETAILED INFORMATION IS AVAILABLE UPON REQUEST.

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One notable exception, on exhibition at the Coliseum show, is a mobile home finished with rough-hewn wood siding.

The growth of trailer sales during the past 16 years has been phenomenal; from 10,000 units sold in 1940 (mostly to vacationers), annual sales climbed steadily to well over 120,000 units in '56, may reach an estimated 150,000 units this year.

Not only are annual sales of mobile homes increasing steadily, but also buyer preferences lean toward bigger units; and both factors help create a fast-growing market for all types of construction and chemical materials.

In '56, 61% of all mobile homes produced were at least 40 ft. in length, whereas in '53 only 18% were in this size group. In fact, some units now are more than 50 ft. long, have as many as three bedrooms. In '56, sales of units more than 45 ft. long—including the 10-ft.-wide models—increased more than 100% over '55. Sales of units less than 25 ft. in length (used primarily by vacationers) increased 20% last year; and although these units—now priced up to $2,000—originated the industry, their sales did not show marked increases until '55 and '56.

Prices of mobile homes range from $2,000 to $7,500—luxury units cost still more. The average price is $4,500.

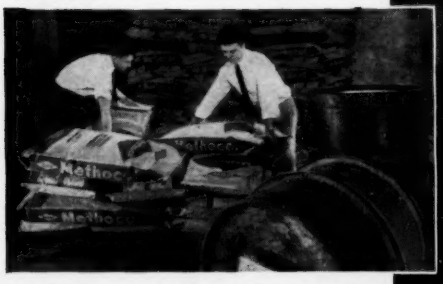
Growth of the mobile homes industry has coincided with a serious shortage of conventional housing, but though the housing shortage has been alleviated, the demand for mobile homes continues to rise. While the National Assn. of Home Builders predicts a 10% decrease in conventional homes building in '57, sales of mobile homes are expected to be the largest in the industry's history.

Who are the people who buy and use mobile homes? Sixty-three percent are mobile or semimobile occupation workers, 20% are members of the armed forces, 10% are retired persons, and the remaining 7% of all buyers include salesmen, engineers, teachers, businessmen, ministers, institutions.

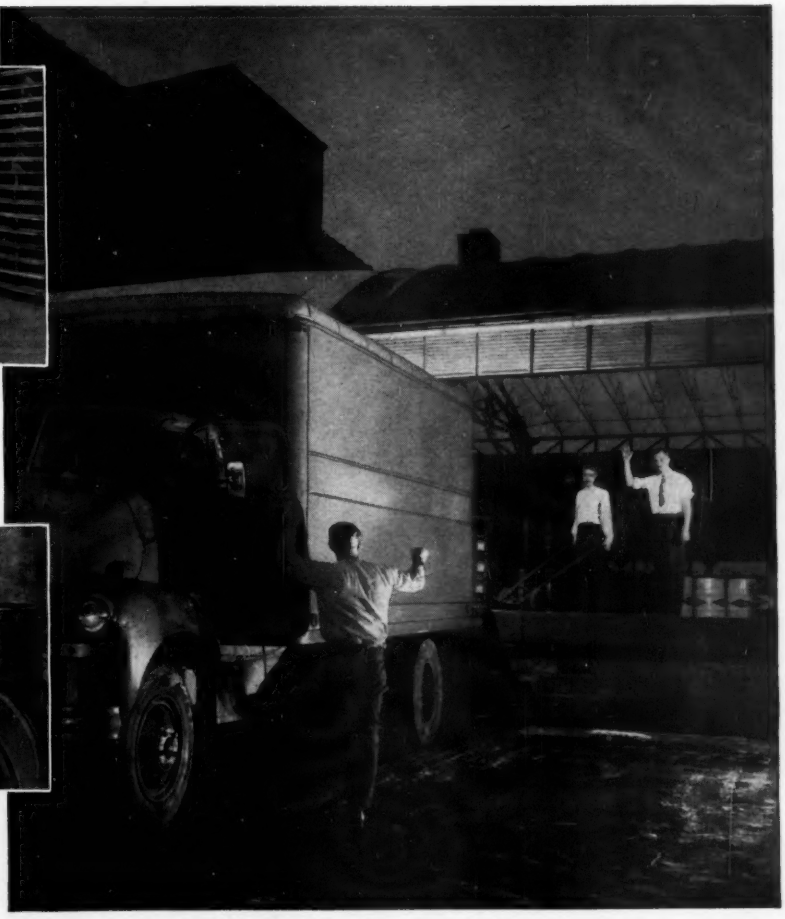
And because these buyers represent such a broad cross-section of the general public, the mobile homes industry—and the industries that supply a host of construction materials—have ample reason to anticipate continued growth of sales in the years ahead.



INVENTORY ERROR threatens to halt production at the plant of a large manufacturer in Wisconsin. Unless supplies of two critically needed chemicals are delivered by early evening the second shift will have to be sent home. A long distance call is put through to Merchants' Milwaukee office.



MERCHANTS' WAREHOUSE has been closed for half an hour when the call comes in, but two of the Merchants sales staff volunteer to stay late to help meet the emergency. They load sixty bags and two drums of chemicals onto trucks and flats, ready for pick-up.



AT 8:00 P.M. MANUFACTURER'S TRUCK ARRIVES, is loaded quickly, takes off for a fast return trip. Dinner was late that night for the two Merchants men, but they had been able to help a customer out of a tight spot. That kind of customer service is a tradition at Merchants Chemical.

THEY WERE READY TO SEND THE SECOND SHIFT HOME, UNTIL...

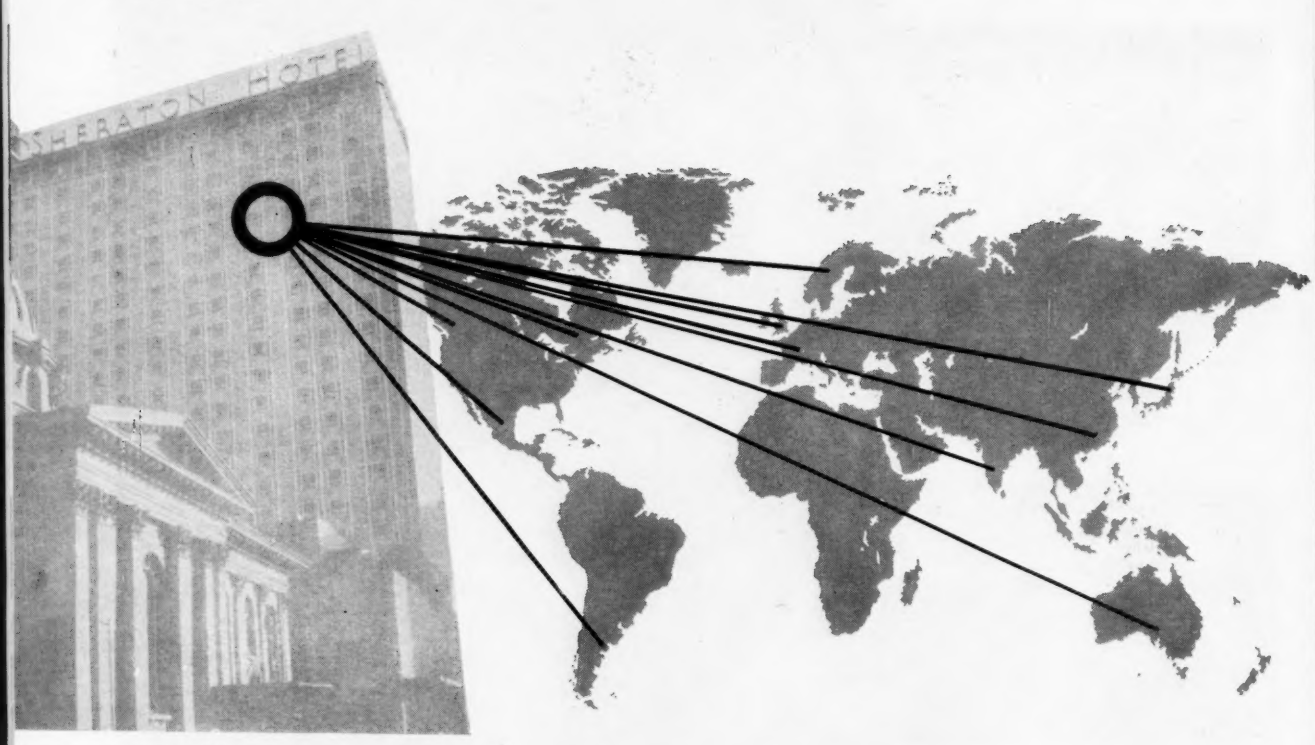
Merchants' Service solved critical supply problem

A distributor, chemical or otherwise, sells service. At Merchants Chemical, service may take the form of emergency accommodation, as in the example cited above; or it may mean experienced technical advice, or special repackaging to help meet a particular production problem. Whatever your need, you'll find that each Merchants office is ready to give your order the special attention it deserves. Merchants serves you from sales offices and stock points across the country. Products offered include acids, alkalis, fungicides, surfactants, chlorinated solvents, emulsifiers, laundry compounds, soaps, dry ice and chemical specialties.

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In Philadelphia's new Sheraton Hotel last week, U.S. market research experts focused on "our next five years of competition with the foreign chemical industry."

CMRA—Window on World Chemicals

What is happening in the world's far-flung centers of chemical activity? Where are notable expansions taking place? How do foreign chemical developments affect U.S. chemical producers? These and other pertinent questions were answered last week by well-informed government and industry spokesmen during the first 1957 meeting of the Chemical Market Research Assn. (*see p. 78*). Site of the get-together: the ballroom of Philadelphia's brand-new Sheraton Hotel.

Pinpointing outstanding areas of growth, Lowell B. Kilgore, deputy director of the U.S. Department of Commerce, Chemical and Rubber Division, painted a word-picture of "The World Chemical Production Map."

During the past decade, he noted, Western Europe's chemical industry has burgeoned tremendously—and equally spectacular gains are on the horizon.

Particularly notable have been expansions in England, Germany, France, and Italy, where chemicals have outpaced—and by a wide margin—the postwar surge of other industries. Western Germany is heading for a further 50% increase of chemical output in the next five years—backed mainly by an expansion of brown coal output (her chief raw material) to 260 million tons by 1960, from 200 million tons in '55. Meanwhile, France has set her sights on a 50-billion-franc, 600,000-metric-ton petrochemical output by 1960—double the '55 rate.

Why is the U.S. a good customer for foreign-produced chemicals? This was answered by Du Pont's Miles Dahlen. He backed his views with a lengthy, fact-packed analysis of current trends in domestic production and imports of selected top chemicals.

Dahlen outlined four major factors underlying the increase of U.S. imports:

The enormous appetite of the U.S. economy for raw materials.

Technological advances in other countries that lead to increased production of chemicals of interest to U.S. industry.

Adaptability of foreign chemical producers, which suits them for the production and sale of specialized chemicals.

The sheer size, strength, and dynamic character of American industry that create increasing demands for foreign-produced materials.

The job of narrowing down those chemical products most sensitive to competition by foreign producers fell to Dow's Lewis Lloyd. The importance of U.S. foreign trade, he noted, has for some time been gradually decreasing (in relation to U.S. national gross product); but this trend is global, he added, resulting from current widespread technological development.

Total U.S. chemical imports are, or course, climbing

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Restaurall detergent powder is a special formulation for all restaurant cleaning needs marketed by Finger Lakes Chemical Company, Etna, New York.



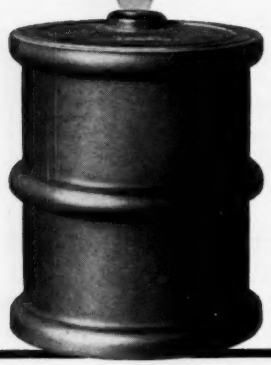
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steadily, and two divergent trends make the American market attractive to foreign producers—decreasing tariff rates on chemicals, and widening gap between U.S. wage rates and those of foreign competitors.

Dollar imports of some key materials since pre-Korean years have multiplied about as follows: total chemical imports, up 400%; industrial chemicals and coal tar products, up more than 500%; soap and toilet preparations, up 300%; paints, pigments, varnishes, up more than 300%.

Faster Build-up: Industrial countries of the free world have added to their total production capacity faster than the U.S. In the past decade, U.S. industrial production has increased 4.2%/year, while that of the rest of the free world has grown at a rate of 8.7%/year.

And the importance of obtaining American dollars has induced foreign exporters to seek sales in this country even before reclaiming some of their former (pre-World War II) world markets. As a result, some segments of the U.S. chemical industry are hard-pressed by imports, and foreign competitors will make further inroads in these fields. If tariffs and other trade conditions remain the same, added Lloyd, it will drive American producers completely out of some parts of the U.S. market.

Heaviest pressure will be brought to bear on products with relatively high selling prices. Foremost among these are dyes and dye intermediates. The well-known reason: no individual dye is used in large tonnage, and it's uneconomical to develop continuous processes with highly instrumented plants. This, in addition to the relatively high cost/lb. of dyes, works in favor of the foreign competitor. Imports of dyes have increased to such an extent that the U.S. now has much idle capacity, and many small producers are hard put to stay in business.

Climbing imports have a decided impact, too, on U.S. production of such intermediates as aniline, phenol and indigo; and on such chemical commodities as caffeine, barbiturates, glycerine, synthetic fibers, vinyl monomers and polymers.

And, of course, heavy imports of dyes, medicinals, plastics and synthetic textiles create problems for U.S. producers of basic chemicals consumed by these industries.

Shippers Perplexed: But U.S. chemical exporters, too, have problems. Stauffer's M. W. Melander turned over the import-export coin to show that doors to a great many trading areas formerly open to U.S. producers are now slammed shut. Unless U.S. producers train their sights on the needs and potentialities of neighboring countries, he emphasized, these producers will be in danger of becoming isolated from the vast trading areas of the world—or at least will have only a moderate share of the total market.

Canada is still largely undeveloped, and is an excellent area for American capital investment. Improved standards of living in Latin America, Central America, and South America (especially in Argentina and Venezuela) create significant trade possibilities. Mexico is emerging as a lucrative market for U.S. goods.

Africa is gaining attention as a possible investment area and Melander pointed out "some 20% of German chemical output is now finding its way into Central and Southern Africa."

Pakistan, India, and the Middle East present vast and untapped markets—but European competition, rates of exchange and political uncertainties compound problems of market development.

In the Far East, Japan, of course, now stands out as a major market because of her dependence on imports of many raw materials (*CW Special Report, Feb. 23, p. 100*).

As Melander sees it, the over-all situation demands a realistic facing of facts. The U.S. is threatened with some very stiff competition, and it's likely to get worse as time goes on. Events move fast, and U.S. producers, he warns, must act fast.

One general outlook emerged from the CMRA discussion of the complex facets of international chemical trade relations. Many undeveloped areas of the world are opening up as new markets; population growth and the world-wide struggle for improved living standards will create ever bigger demands for chemical products.

But if there are new opportunities ahead, so, too, are there new competitors; and there are many new—and serious—problems to be solved; they are problems that will force chemical marketers to think increasingly in terms of the total international scene.



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CMRA hears Grace's Winne on foreign trade



"A splendid market is suddenly cut off due to the shortage of exchange. It would be possible to sell to this market if we could . . . accept payment not in currency but in materials such as cattle, available in that country."

Pattern for Profit in Foreign Sales

Offering the above suggestion more as food for thought than a rule of business, Grace Polymer Chemicals Division's Vice-President Elwyn Winne took stock of the know-how U.S. companies need to crack foreign markets. Occasion: the Philadelphia meeting last week of the Chemical Market Research Assn. on foreign competition (*see p. 74*).

What's needed? Intensive study of such factors as the general economy, inflation and credit, avers Winne.

Economic conditions. Errors in foreign market forecasts are likely to exceed those in domestic predictions because of smaller statistical bases for extrapolation, and because foreign economies often closely follow the success and failure of one or two principal export crops. Two forecasting methods, however, are particularly useful: projections based on comparison of the foreign market against a similar stage in the U.S. history of the product; use of an index of foreign demand relative to the U.S. demand.

Inflation. Currency devaluation, often an aftermath of inflation, usually means that "your capital goes in at one value and your profits come back at another." It pays, believes Winne, to consider the country's percentage of export trade with respect to the gross national product and the percentage of government revenue stemming from foreign commerce. Countries with high ratios and those dependent on "highly cyclical commodities" are most prone to inflationary pressure.

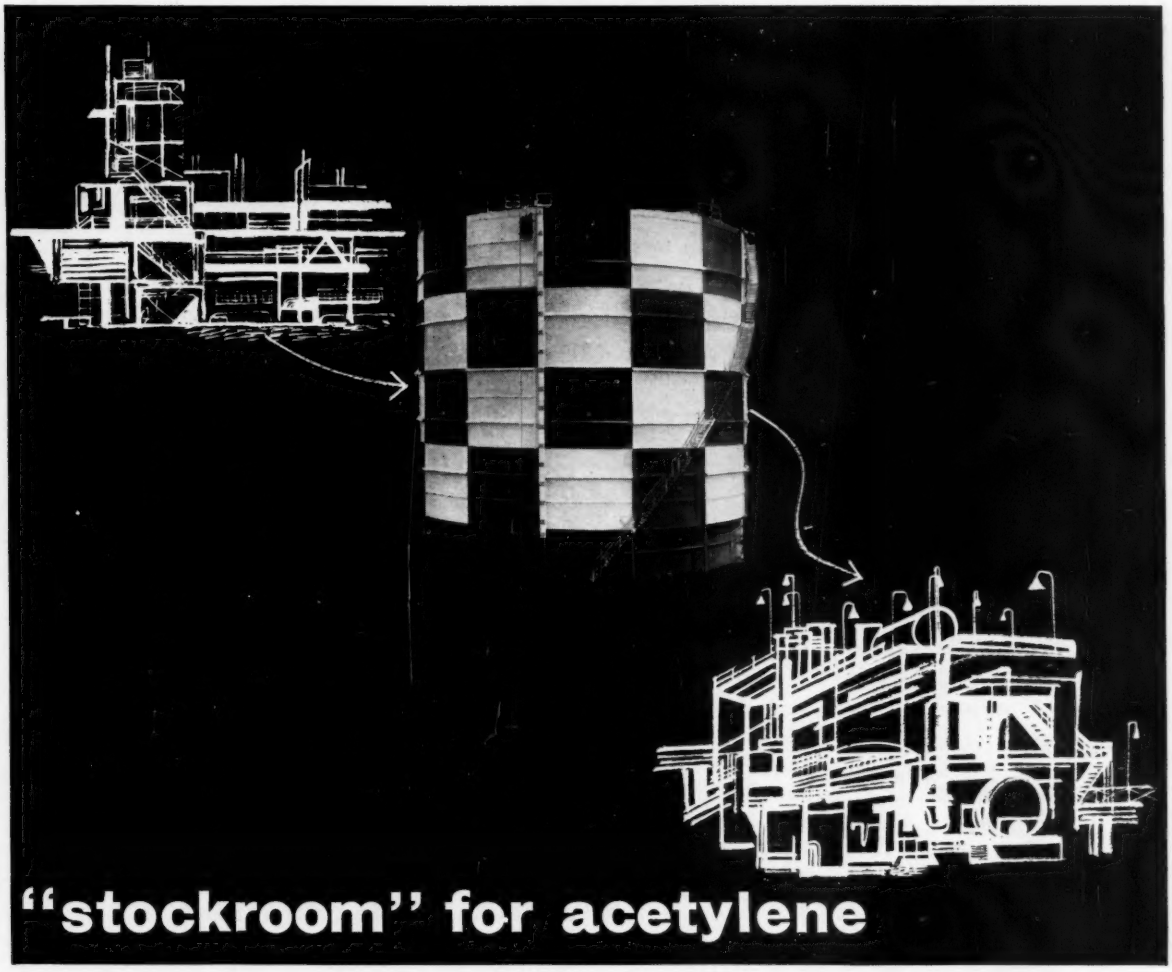
Make or export. It's a mistake to think that foreign countries will automatically welcome local production; it usually adds to the inflationary trend. Yet, a go-ahead can frequently be secured from government authority if a "real selling" job is done. Chances of success increase if the product is an economic necessity and if local production decreases the dollar drain.

Credit. Construction of overseas plants needn't necessarily be held up for fear of devaluation. U.S. producers can sidestep the difficulty by a "joint venture with a locally well-heeled partner," use of the fast-growing foreign investment banking facilities and arrangements with international agencies such as the Export-Import Bank.

Dollar-shortage difficulties, too, can sometimes be averted. "Switch" transactions (sale to a country with adequate dollar reserves, resale to the country of final destination) is one good method, Winne feels.

Profit picture. Blocking of profit return, devaluation, and dollar shortages create difficulties in getting profits back to the U.S. When profits are blocked, it's "frequently desirable to capitalize all or part of them" to handle future business growth. Barter deals may be the answer to dollar shortages, Winne suggests. And, in some cases, "insurance" is possible in the form of the U. S. government's investment guarantees.

Of course, hard and fast rules for foreign market development can't be formulated. But as many a program participant pointed out, broad general familiarity with overseas marketing is indispensable in meeting foreign competition.



Linde purchases Wiggins Gasholder for storage of acetylene between production and use cycles

When Linde Air Products Company's new acetylene plant in Montague, Michigan goes "on stream", a new 100,000-cubic-foot Wiggins Gasholder will play a vital role in the operation. Every cubic foot of acetylene produced will pass through the "stock-room" on its way to DuPont for use in the production of Neoprene. The gasholder will provide acetylene storage and will serve as surge capacity to enable Linde to satisfy both normal and emergency requirements.

If you produce, store or use gases, investigate the advantages of Wiggins Gasholders. They can be built to any capacity—from 50-cubic-feet to a million. Call or write General American for complete information.

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Inside Story on POWELL STEEL VALVES

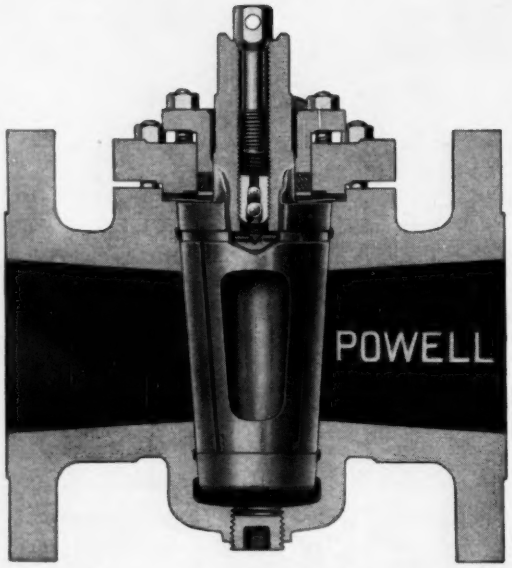


FIG. 3059--(Sectional)--A.S.A. 300-pound Steel Lubricated Plug Valve.

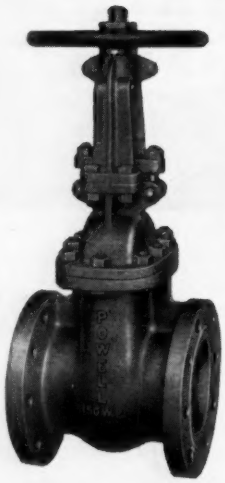


FIG. 2456 SS--OS&Y Gate Valve--1/16 Raised Face Separate Yoke Arms. Flanges are in accordance with ASA B16.5.

Steel Valves may appear similar on the outside. But their performance may be quite another story--for there can be a big difference in the metal, in design and in manufacture. And the inside story on Powell Steel Valves is that every valve has PERFORMANCE VERIFIED.

Only the finest materials are used in Powell Steel Valves. And painstaking quality control is rigidly enforced through each step of manufacture. For example, every machining operation is accurately gauged. All parts are thoroughly cleaned and degreased. As a final step in manufacture, EVERY POWELL STEEL VALVE IS GIVEN AN ACTUAL LINE TEST.

Because of Powell's painstaking quality control, plant shutdown through valve failure is practically unknown. Records from refineries, power and industrial plants the world over prove it.

Consult your Powell Valve distributor. If none is near you, we'll be pleased to tell you about our COMPLETE quality line which has PERFORMANCE VERIFIED.

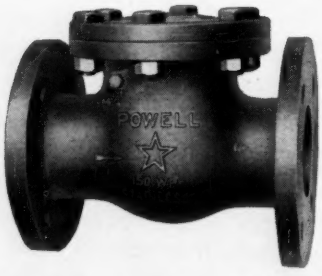


Fig. 2433 SS--Stainless Steel Bolted Cap Swing Check Valve for 150 pounds W.P.

PERFORMANCE PV VERIFIED

The Wm. Powell Company, Cincinnati 22, Ohio . . . 111th YEAR

POWELL VALVES

BRONZE, IRON, STEEL AND CORROSION RESISTANT VALVES

Market Newsletter

CHEMICAL WEEK
March 23, 1957

Some polyester resin prices will be higher by 1¢/lb. the first of next month. Behind the hike? The same "increased manufacturing cost" refrain as that sung by melamine and urea surface-coating resin makers when they raised their prices *(CW Market Newsletter, March 16).*

Reichhold Chemical started the ball rolling with word that prices of all its Polylite polyester resins (in any quantity), would go up April 1. Reason: "substantial rises during the last six months in major raw material costs, added to higher overhead, container, and freight charges."

What other polyester makers will do isn't certain yet, but a hint may lie in the statement of one marketer—"Everybody's got the same cost problems these days."

Solid urea prices will go up, again with April 1 as pivot point. The increase: $5/ton on both industrial and agricultural material. Rising production costs may have had some influence in the lifting of prices, but urea demand—especially for fertilizer use—is picking up noticeably.

Reports circulating in the trade, however, indicate that the firming in domestic prices could trigger a definite increase in amount of foreign urea coming into the U.S. Italy, for instance, has been directing a fairly steady flow toward these shores.

•

U.S. sellers of ammonium sulfate haven't been doing as well as foreign competitors in carving out chunks of certain overseas markets. Despite published information elsewhere that American suppliers won out recently in bidding for the bulk of a sulfate order for Korea, a report to *CW* from Tokyo indicates that Japan garnered most of the business.

That country was awarded an order for some 155,500 metric tons (it offered 200,000 tons); U.S. sellers wound up with 67,500 tons of ammonium sulfate business; Canada was third in the bidding.

Japanese fertilizer sellers have been concerned over increasing sulfate stocks, but the Korean business will help relieve the anxiety—at least for awhile.

•

Further underscoring Japan's bustling chemical activity is news that production of polystyrene has begun at the new Kawasaki plant of Asahi-Dow Ltd.

The addition to Japan's sprouting chemical and plastic industries *(CW, Feb. 23, p. 100),* came into operation two weeks ahead of schedule. It's the second joint venture undertaken by the Japanese-American firm. (First was manufacture of saran and saran filaments.)

There's no data available on the new plant's styrene capacity, but, says Dow International, "from the time the original agreement was

drawn up in '54 until the engineering began, the size of the Kawasaki plant doubled."

•

Major chemical expansions continue in the U. S., too. Latest in phthalic anhydride, for example, is Monsanto's 60% capacity-increase at Everett, Mass. No official word on how much phthalic the expanded plant can produce, but trade talk pegs the new capacity at slightly over 30 million lbs./year.

Generally speaking, phthalic demand is considerably firmer than it was during the final quarter of '56, but—say marketers—it could be better. Fact is, supply is still on the heavy side compared to demand, but business is expected to show a continuing improvement in the weeks ahead.

Prices, incidentally, are steady, and not likely to undergo any immediate change.

That's not been so in the vitamin business: prices continue to become more attractive to consumers. Niacinamide (USP) has just been cut $2.50/kilogram bringing schedules (in 50 kg. fiber drums) down to $9.50/kg. It's said to be the lowest price quoted in ten years.

Several explanations are being advanced for the niacinamide reduction: it will bring prices more nearly in line with niacin; there have been process improvements and increased production; and, of course, there's sharp competition.

•

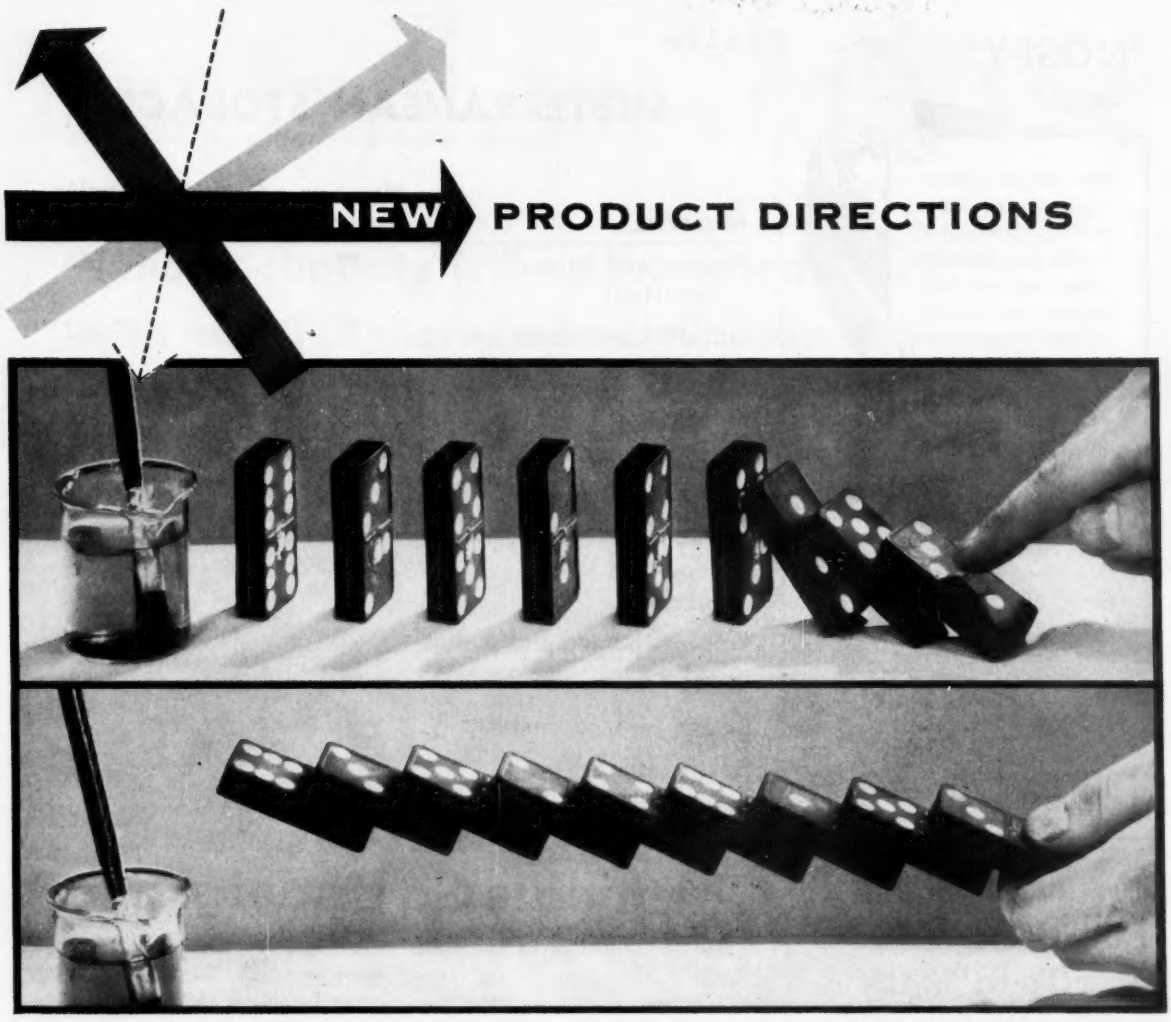
Factors that impelled one major solvents maker to hike prices last week are apparently universal in the industry. By now, most producers of perchloroethylene, trichloroethylene, carbon tetrachloride, and other chlorinated solvents, have gone along with the coming increase.

Technical and CP carbon tet, for example, will generally move up ¾¢/lb. April 1, on both contract and spot business.

SELECTED PRICE CHANGES — Week Ending March 18, 1957

	Change	New Price
UP		
Sulfur dichloride, ret., dms., c.l., wks., frt. equald.,	$0.0025	$0.0425
Vanillin, ex eugenol, 1,000 lbs. or more in 100 lb. containers	0.10	2.85
DOWN		
Niacinamide, U.S.P., dms., frt. adj., per kilo	2.50	9.50
Trimethylamine, 25-40 pcs soln., dms., c.l., wks., frt. equald., 100% basis	0.07	0.35

All prices per pound, unless quantity is stated.



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High initial tack in adhesives, excellent spreadability and strong water-resistant bonds recommend PAM* (polyacrylamide) as a component to improve liquid, film or bond properties. Applied as a surface coating, PAM films perform as a release surface for pressure-sensitive adhesives.

As a stable thickener and dispersant, PAM is useful in water suspensions and emulsions ranging from cosmetics to emulsion paints.

The water solubility of Cyanamid's PAM is limited only by final viscosity, and it is compatible with virtually any water-soluble resin or modified cellulose. Solutions are stable to electrolytes and surfactants over a wide pH range. Although PAM is essentially non-ionic, sulfomethylation yields anionic derivatives, while Hoffman degradation, aminoethylation or Mannich reaction yields cationic derivatives. PAM can be insolubilized in several ways, including reaction with aldehydes.

Cyanamid's PAM is available in three grades: PAM 50*, PAM 75* and PAM 100*, having a Brookfield viscosity range of 130 to 1800 cps at a 5% solution. Also available is a research grade, a liquid solution, with a solids content of 40% and a viscosity of approximately 1500 cps. Additional information is contained in the booklet, "Polyacrylamide," available on request.

*Trademark



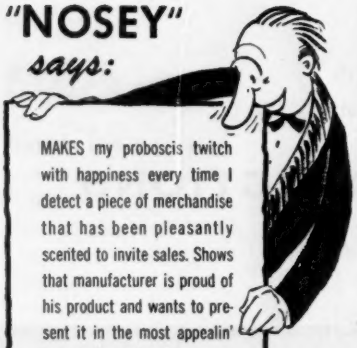
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SUBTERRANEAN STORAGE

(excludes government projects)

Material	Number of reservoirs	Capacity (million barrels)
Propane and butane (unmixed)	27	9,666
Liquefied petroleum gas	19	9,302
Propane	27	3,580
Butane	5	1,431
LPG, ethylene, chemical	3	1,976
Propane and isomer mixtures of higher hydrocarbons	1	560
Propane and butane-propane mixtures	4	535
Propane, butane and olefins	1	400
Olefin feed stock	1	43
Butane-propane mixtures	1	25
Heating oil	1	1,000
Total	**90**	**28,518**

Chemicals Go Underground

Underground storage of petroleum products and petrochemical raw materials is surging ahead at a rapid rate in the continental United States. Capacity available to private industry has now passed the 25-million bbls. mark —more than a threefold increase over the 1952 capacity of 7 million bbls.

That's one of the principal findings in a just-released report of the National Petroleum Council on underground storage of petroleum products. Requested by the U.S. Dept. of the Interior, the study probes deeply into industry experience on site selection, design and construction, use, costs, operation and contamination problems.

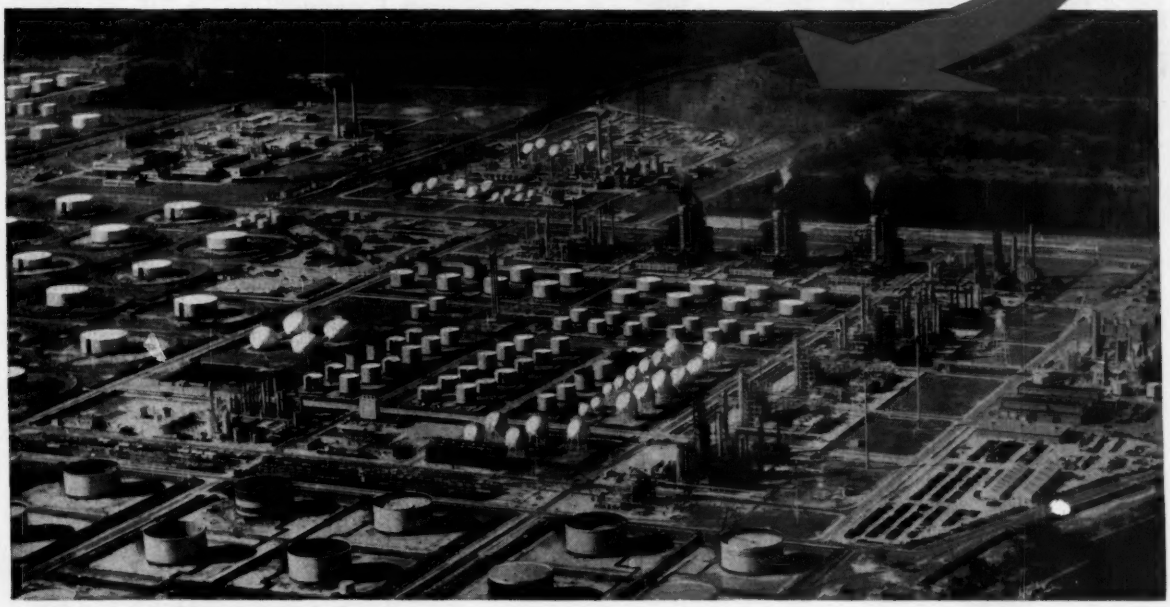
• Uses—The report cites four basic uses of subterranean "warehousing": process storage of raw materials for petrochemical and other oil products manufacturing; plant storage of products (primarily butane, propane and LPG) destined for distribution through wholesale outlets; local marketing terminals; pipeline surge space. The extent of underground storage use by the chemical industry is difficult to gauge from the NPC data. It does show, however, a separate listing for olefin feed-stock (for alkylation) storage amounting to 43 million bbls. And, undoubtedly, some of the light hydrocarbons separately itemized in the reports are consumed in chemical reactions.

• Site selection—Storage cavities formed by dissolving salt in dome and bed formations account for about 75% of the available space. Underground reservoirs formed from abandoned oil and gas wells comprise about 16% of the total capacity. Of the four chemical storage projects identifiable from the NPC report, three are of the dissolved-salt-cavern type and are located in Texas, the other is a California reservoir in water-sand structure. Texas leads in both the number of storage projects (141 out of 244) and in capacity (18.3 million bbls.).

• Operation—NPC's study stresses the necessity for careful design of underground storage facilities to achieve economical operation. Many operating difficulties (pipe pluggage, corrosion, contamination, etc.), however, can be overcome by established engineering

butyl rubber

Nation's capacity will be increased 33⅓% with new PCI plant to be built here by Foster Wheeler



Here at Lake Charles, Louisiana, Petroleum Chemicals, Inc. will expand its petrochemical facilities with the addition of a butyl rubber plant — to be built by Foster Wheeler.

With an initial capacity of 30,000 tons per year, this $17,000,000 plant will be the first one built since the war and its operation will increase the country's total butyl rubber capacity by about one third. This new plant will obtain its raw materials from the hydrocarbon streams available at the Lake Charles refineries of Cities Service and Continental Oil Companies, joint owners of Petroleum Chemicals, Inc.

Foster Wheeler is also building a 300 ton/day ammonia synthesis plant at the same site.

This is another example of how Foster Wheeler's design, engineering and construction experience is helping to meet the exact requirements of petroleum, chemical and petrochemical processing plants the world over.

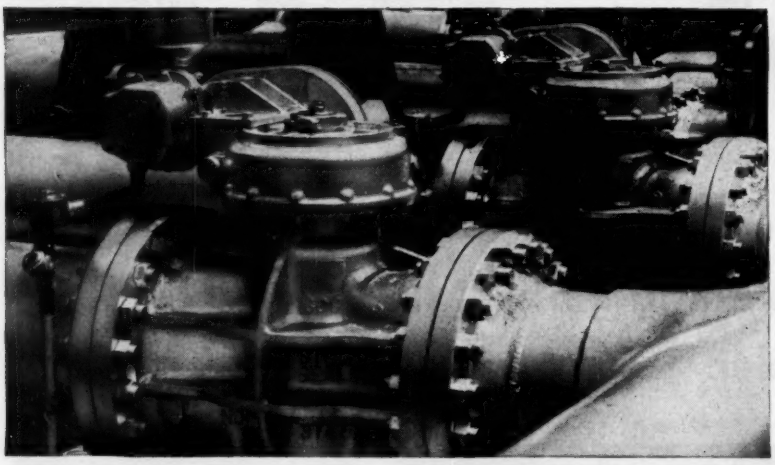
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Dielectric constant (ASTM D150-47T)	@ 60 cycles	4.34
	@ 1000 cycles	4.33
Power factor (ASTM D150-47T)	@ 60 cycles	0.65%
	@ 1000 cycles	0.05%
Volume resistivity, (ASTM D257-52T)	OHMS-CM.	2.4×10^{13}

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CHEMICAL PROGRESS WEEK-APRIL 8-12

SALES

techniques. Unrecoverable product losses, the report finds, "are not generally excessive." In solution cavities, losses range from 2 to 10%, in mine storage caverns, from 0 to 2%. Losses in water and sand sites and depleted oil and gas reservoirs, however, are reported to vary from 2 to 50%. Little contamination has been encountered in solution cavities. But products stored in oil and gas reservoir and water sand type of formations often require reprocessing.

• Costs—"Out-of-pocket" operating costs vary considerably, but a typical installation with a capacity ranging from 100,000 to 750,000 bbls. shows a 15¢/bbl. cost if the inventory is turned over once a year. Costs for a minimum size installation range from 15 to 80¢/bbl., processed; for a maximum-size project, between 10 and 70¢. The report shows that it costs very little more to process 700,000 bbls. than it does for 500,000 bbls., and that underground storage is particularly suitable for stocking large volumes of petroleum products.

To date, the chemical industry has made only limited use of cavern storage. But if the present trend continues, and petrochemicals continue to bulk larger in the chemical sales scene, it figures that more chemical raw materials will nestle in huge underground cavities.

DATA DIGEST

• **Antimony trichloride:** 12-p. booklet provides information on shipping containers, storage, waste disposal, properties and safe handling techniques for antimony trichloride. Price: 30¢. Manufacturing Chemists' Assn., Inc. (Washington, D.C.).

• **Hexachlorophene:** Supplement to previous technical bulletin H-1 gives abstract of 28 studies and one patent on hexachlorophene technology. Sindar Corp. (New York).

• **Caustic soda:** Wall chart presents, in nontechnical language, rules and precautions to follow in the handling and storage of caustic soda, first-aid suggestions and procedures for thawing solidified material in tank cars. Solvay Process Division, Allied Chemical & Dye Corp. (New York).

• **Urethane foam:** Combination catalog and file folder for storing data sheets describes custom formulations for foamed-in-place plastics, applica-

MARKETING-MANUFACTURING-DEVELOPMENT

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Formation of new petrochemical company solidly based on existing business offers challenge and unexcelled opportunities associated with plans for rapid expansion in many chemical and polymer product areas.

SALESMEN Five to fifteen years industrial experience. Must be willing to travel and relocate.

SALES TRAINEES Graduates with zero to three years industrial experience interested in line sales or marketing staff jobs. Must be willing to travel and relocate.

ADVERTISING Minimum of three years experience writing copy, selecting space and handling agency liaison for chemical selling organization. Previous sales, technical service, development or product application laboratory experience helpful. 3-15 years total business experience. Location Chicago.

EXPORT MANAGER To establish export sales department. Sound technical background, personal knowledge of European and Latin American markets required. Language ability and travel experience desirable. 10-20 years industrial experience. Initial location Chicago.

DISTRIBUTION PLANNING To be responsible for economic evaluation and planning of chemical distribution. 2-5 years bulk marine transportation experience desirable. Location Chicago.

FIELD TECHNICAL SERVICEMAN 5-20 years industrial experience including at least 3-5 years field technical service. Also should include three years recent experience formulating for or selling to one or more of following industries: rubber, alkyd, lacquer, vinyl calendaring or extrusion, caulking compound, asphalt floor tile, plasticizer. Appreciable travel required. Relocation probably involved.

TECHNICAL SERVICE Formulators also desired with 2-10 years formulating experience in industries listed above, for bench work possibly leading to field service assignments later if qualified and interested. Midwest or Texas locations available.

TECHNICAL WRITER Demonstrated skill in preparing technical brochures and literature required. 2-5 years writing experience desired. Previous laboratory or sales experience helpful. Minimum travel. Open to both male and female applicants. Location Chicago.

COMMERCIAL CHEMICAL DEVELOPMENT TRAINEES 3-5 years experience in commercial development, line marketing or product application work required. Candidates with Masters or M. B. A. degrees preferred. Must be willing to relocate and travel.

DESIGN & CONSTRUCTION ENGINEERS Mechanical and Chemical Engineers with experience in petrochemical or refinery design and construction at junior, intermediate and advanced responsibility levels. 2-10 years experience. Location Brownsville, Texas.

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EDUCATION REQUIRED All of above positions require minimum bachelors in chemistry or chemical engineering.

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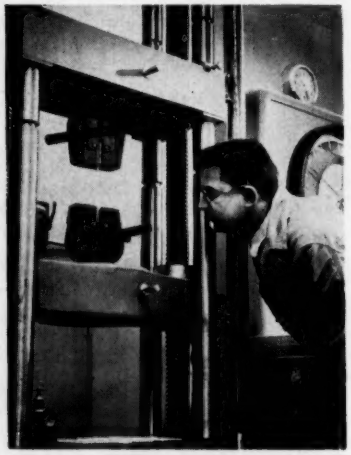
SALES

tions, and electrical, adhesive, impact strength and other properties. Dayton Rubber Co. (Dayton, O.).

• **Licensing and exchange:** Data sheet describes import, export and exchange controls of Mozambique and pertinent regulations of the U.S. governing trade with the country. Price: 10¢. World Trade Information Service, Part 2, No. 57-7, U.S. Dept. of Commerce (Washington, D.C.)

• **Laboratory glassware:** 16-p. catalog provides specifications and prices of such glass equipment as burets, Karl Fischer apparatus, separatory funnels and stopcocks. Fischer & Porter Co. (Hatboro, Pa.).

• **Catalog:** New edition lists company chemical products, gives specifications and structural formulas, lists addresses of sales offices and plant locations. Reilly Tar & Chemical Corp. (Indianapolis).



Ready to Race

Technical service facilities, recently opened at Clifton, N.J., by W. R. Grace's Polymer Chemicals Division, brings Grace a big step closer to the hot sales race that's now developing in high-density polyethylene. Advantage of the New Jersey location, report Grace officials: it's within a 300-mile radius of more than 50% of U.S. plastic fabricators. Sales offices will be set up in Los Angeles, Chicago and other large cities. Grace's polyethylene plant, now abuilding at Baton Rouge, La., which will have an annual capacity of 50 million lbs., will be completed by mid-'57.



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There are seven centrally located U.S. Steel container factories across the country. Each one is completely integrated to give "next-door" service to every shipper in the area. Why not make your shipping plans around this prompt, sure U.S. Steel service.

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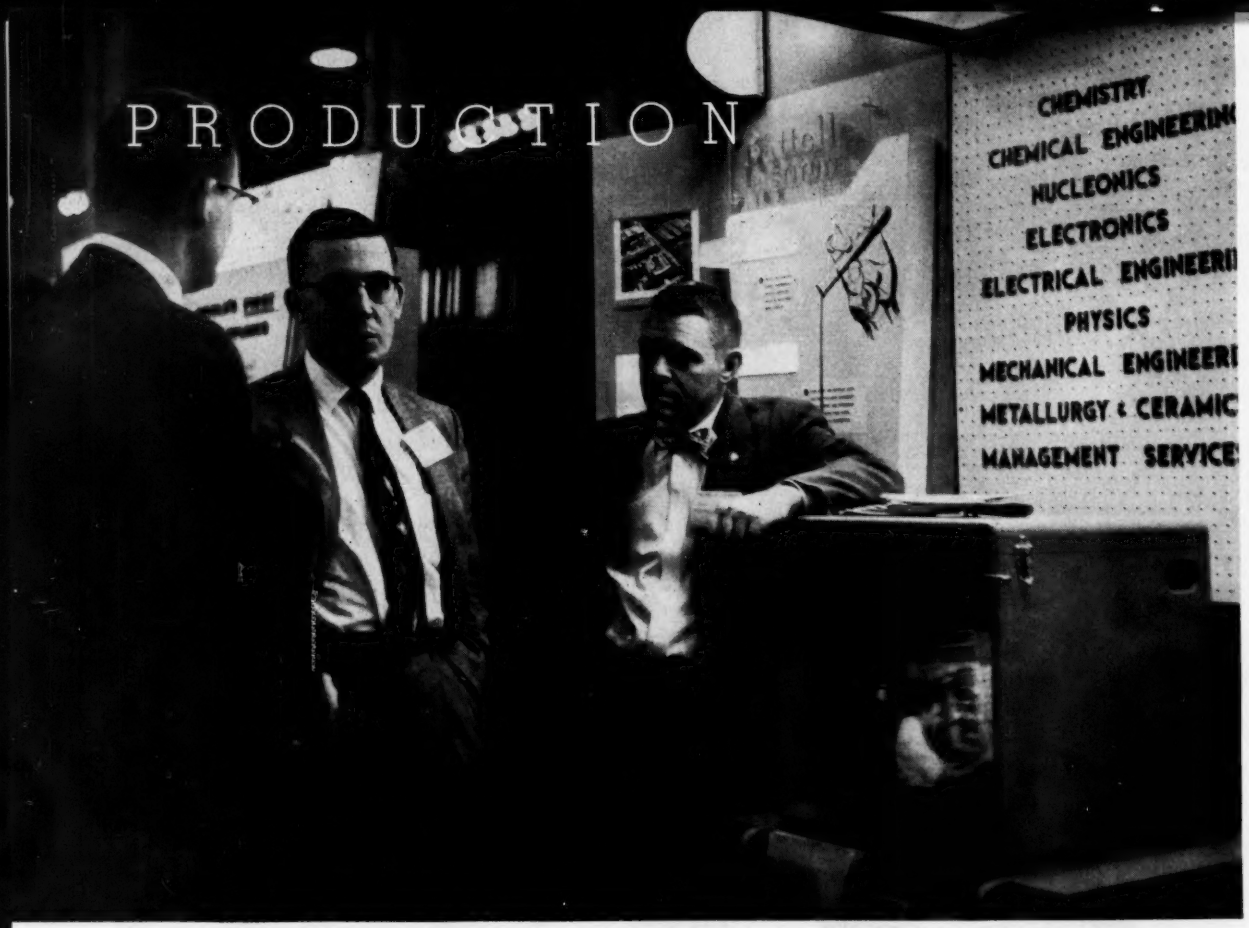
- **Best rust protection** — there's more zinc phosphate on every USS rust-inhibited container.
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USS STEEL DRUMS

UNITED STATES STEEL



CARBORUNDUM'S Mark (center), Battelle's Tipton (left) and Clegg find atomics utilize familiar technologies.

'It's a Lot Like Another Chem Show'

To the thousands of engineers, executives and specialists in the various fields that touch on nuclear energy who descended on Philadelphia last week for the third International Atomic Exposition, it was almost like another chem show. Exhibitors, whose displays crowded into Convention Hall, were by and large the same ones that supply process equipment, plants and materials to the non-nuclear process industries.

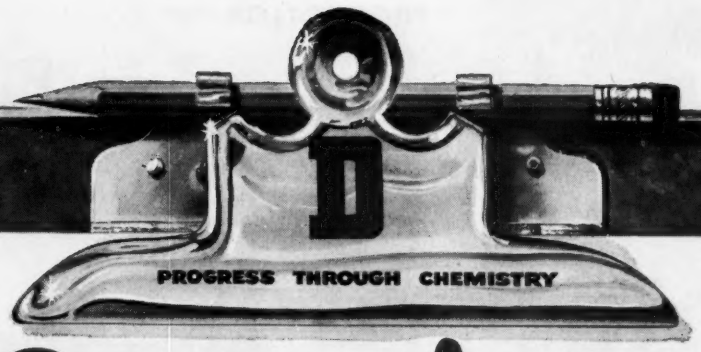
As always, the exhibits had something for everybody: for Arturo Freire, physics professor from Ecuador's Central University, Aerojet-General Nucleonics' operating laboratory reactor was a show highlight; for Major J. M. Viehman, who came down from the Air Research & Development Command's Hanscom Field (Bedford, Mass.), it was a variety of information on the production of nuclear fuels.

But for Stanley Mark (*see cuts*), a supervising engineer at Carborundum's engineering research branch, a tour of the exhibits was highlighted by a capsule view of new developments in ceramics for nuclear applications.

At the display of Cooper Metallurgical Associates (Cleveland), for example, Mark discussed silicon boride with Cooper owner W. M. Weil, learned of new experiments with harder-than-diamond materials. In viewing National Research Corp.'s exhibit, new features



ARC FURNACE features are pointed out by NRC's Rogers.



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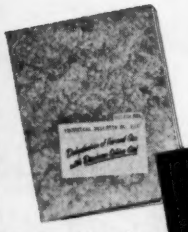
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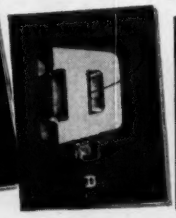
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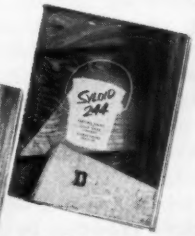
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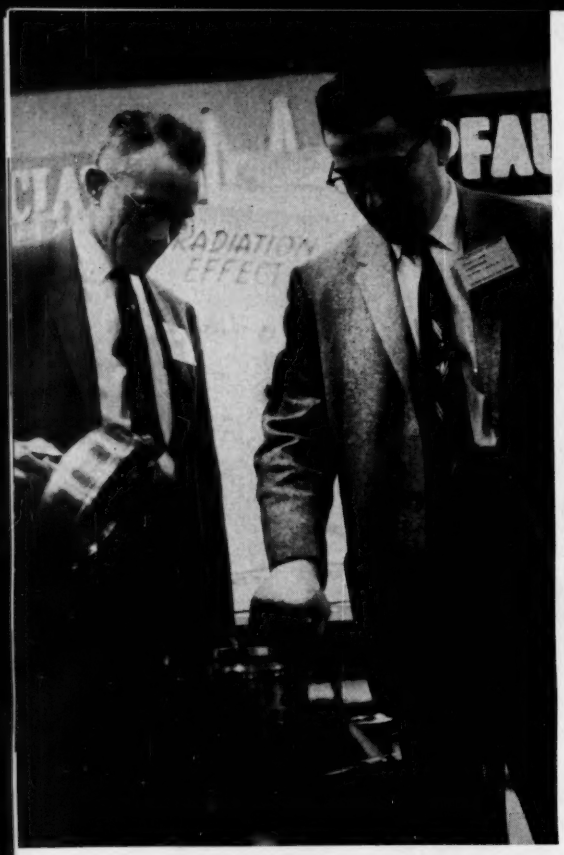
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NUCLEAR CERAMICS: CMA's Weil touts special borides.

ATOM-AGE METAL: Pfaudler's Warren shows all-zirconium vessel.

of a towering consumable electrode arc furnace caught his eye. Farther down the aisle, Mark stopped to chat with friend George Warren of Pfaudler's research lab, who showed him a small all-zirconium reaction vessel —one of the first products of Pfaudler's work in this type of fabrication.

At Battelle Memorial Institute's booth, chemical engineering department manager John Clegg and physics consultant Clyde Tipton were on hand to talk with Mark on many subjects of common interest—both in and out of the nuclear field. On his next stop —to observe the operation of AGN's research reactor—Mark met G. M. Butler, manager of Carborundum's engineering research branch. Together they toured the show, viewing several reactor plant models representing new and potential applications for ceramic fuels and shielding, winding up at a display of nuclear fuel elements and components produced by Metals & Controls Corp. (Attleboro, Mass.).

Big Little Show: The exhibitors spread their nuclear wares over 20% more area than was occupied at the last atomic exposition. And though the number of opening-day visitors was limited, (a $2 registration fee excluded many of the "just curious" show-goers), exhibitors were generally agreed that the quality of inquiries was high, that those who attended displayed genuine interest in the various nuclear products and equipment.

Further emphasizing the general nature of the show, Walter G. Whitman, head of Massachusetts Institute of Technology's chemical engineering department and general chairman of the show, remarked that nuclear engineering is not, in itself, a special field. Rather, it is an extension of familiar technologies applied to the



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BACK TO BASICS: Butler and Mark view how M&C uses ceramics.

task of putting the atom to peaceful uses. The Nuclear Congress (of which the Atomic Exposition is a part), said Whitman, presents a wonderful opportunity for technologists and industrial people to get together and discuss nuclear developments.

And for the technically minded conferees, technical sessions running concurrently with the show imparted plenty of information: the second Nuclear Engineering & Science Conference, sponsored by Engineers Joint Council, presented 150 papers at 33 meetings; National Industrial Conference Board's fifth Atomic Energy in Industry Conference conducted 13 panels with 75 panelists, including some from foreign countries; the fifth Hot Laboratories & Equipment Conference delivered 60 papers over the course of 6 meetings.

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FOREIGN FIELD: Carborundum engineers study AGN reactor operation.





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EQUIPMENT

Ultrasonic Flowmeter: Gulton Industries, Inc. (Metuchen, N.J.) says its new model UF-100 flowmeter measures fluid flow without causing pressure drop. Straight-through design and a modified ultrasonic beam turn the trick. Recommended for low-viscosity liquids, such as kerosene, water and liquid oxygen, it's said to measure flows in the 1,000- to 4,000-gpm. range with an accuracy of better than 1%.

•

Consistency Recorder: Fischer & Porter Co. (Hatboro, Pa.) offers its new Plastometer for continuous measurement of the consistency of fibrous and pulpy slurries. Meter's wide range, calibrated in arbitrary units, may be changed without special tools, attachments. Construction meets sanitary requirements, says F&P, permits simple disassembly for cleaning.

•

Vibrating Feeder: Cleveland Vibrator Co. (Cleveland) has introduced a new vibrating feeder with a pneumatic drive. A wide variety of bulk materials (including many used in high-temperature and corrosive applications) can be fed at angles of inclination up to 20 degrees, says CVC. Feed rates are changed by varying air pressure of vibrating drive over a 30-90 psi. range.

•

Portable Fire Pump: A lightweight pump that can be moved swiftly to water sources that are out of reach of a regular fire-fighting pumper is a new product of Bell & Gossett Co.'s Marlow Pumps Division (Midland Park, N.J.). Over 100 lbs. pressure is available for fog or foam operation. Pump is powered by 4-cycle, 9-hp. gasoline engine, weighs 160 lbs., has removable wrap-around aluminum handles to protect from roll-over damage.

•

Rubber-Lined Valve: La Favorite Rubber Co. (Hawthorne, N.J.) offers a new rubber-lined horizontal-swing check valve for corrosive-chemical lines. Body comes in rubber-lined cast iron or steel; trim can be of alloy, hard rubber, plastic (including Teflon) construction. Sizes: 1 to 14 in.

•

Fluorosilicone Rubbers: Custom-made fluorosilicone rubber products that will withstand temperatures from —80 to 400 F are new offerings by Kirkhill Rubber Co. (Brea, Calif.). Materials will not deteriorate or swell appreciably when exposed to fuels or solvents, Kirkhill claims.

•

Vacuum System: A new vacuum system for use in pilot plants, limited-production units and laboratories is available from the Rochester Division of Consolidated Electrodynamics Corp. (Rochester, N.Y.). Designated type LC1-18A, the system includes a three-stage oil diffusion pump, choice of 13-, 15-, 27- or 130-cfm. mechanical pumps for roughing and backing, and a complete line of standardized accessories. Ultimate pressure of 3 x 10^{-5} mm. Hg (3 x 10^{-6} mm. Hg with fractionating oil diffusion pump) can be reached. Pressures in work chamber and fore-pressure lines are measured by new discharge and Pirani gauges covering the range from 2 mm. to 1 x 10^{-7} mm. Hg. Pirani detects leaks from 1-micron to 10-mm. Hg pressure.

•

After Cooler: A large-capacity Aero After Cooler is newly offered by Niagara Blower Co. (New York) for cooling and removing moisture from compressed air. The unit obviates the need for large cooling water supply. Recirculated water constantly sprays onto cooling coils—one for compressed air, one for jacket water—mounted in parallel. Air stream removes heat of compression at the rate of about 1,000 Btu./lb. of water evaporated, drops entrained moisture in plenum before being ejected by fan. Units with capacities up to 23,000 cu.ft./minute of free air, cooled from 275 to 85 F at 75 F wet-bulb atmospheric air, are available for indoor or outdoor installation.

•

Lens Cleaner: U.S. Safety Service Co. (Kansas City, Mo.) is out with a new lens-cleaning station. The unit is 9x15½x4 in., contains plunger-type, spray-top, 8-oz. bottle of anti-fogging cleaning fluid, two tissue dispensers and a used-tissue receptacle.

•

Steam Traps: A new series of low-cost thermostatic steam traps is available from The Clark Mfg. Co. (Cleveland). Tagged Series A, the traps operate by temperature differential (instead of buoyancy), are made of cast semisteel with bronze or Monel bellows and vertical outlets. Operating range: steam pressures up to 250

psi., temperatures up to 450 F. Sizes: ½- and ¾-in. inlet and outlet connections.

•

Impact Wrench: The Swench, Swenson Engineering Co.'s (Branford, Conn.) new manually operated impact wrench, is said to deliver torque values up to 20 times greater than those applied by the operator. It's operated like an ordinary ratchet wrench—as its handle is pulled, spring and rotor mechanism delivers hammer blows through the socket. Three models fit sockets and bolts from ½ to 1¾ in. diameter.

•

Pressure Tester: Consolidated Electrodynamics Corp. (Pasadena, Calif.) claims its new portable Type 6-201 primary pressure standard will calibrate any pressure-measuring device with accuracy not ordinarily possible with oil dead-weight testers or mercury manometers. The unit calibrates by balancing a controllable air pressure against the force generated by a weighted piston and simultaneously feeding the pressure to the device under test.

CHEMICAL WEEK • ADVERTISERS INDEX

March 23, 1957

ALLIED CHEMICAL & DYE CORP. NITROGEN DIV. 16
Agency—G. M. Basford Co.

AMERICAN CYANAMID CO. MANUFACTURES CHEMICALS DEPT. 83
Agency—Hazard Adv., Co.

AMERICAN MINERAL SPIRITS CO. 38
Agency—Leo Burnett Co., Inc.

AMOCO CHEMICALS CORP. 87
Agency—D'Arcy Adv. Co.

ANTARA CHEMICALS, DIV. OF GENERAL ANILINE & FILM CORP. 71
Agency—The House of J. Hayden Twiss

BECCO CHEMICAL DIV., FOOD MACHINERY & CHEMICAL CORP. 31
Agency—John Mather Lupton, Inc.

BIRD MACHINE CO. 69
Agency—Walter B. Snow & Staff, Inc.

BLOCKSON CHEMICAL CO. 11
Agency—William Balsam, Adv.

THE BOARDMAN CO. 36
Agency—Erwin, Wasey & Co.

BROWN & ROOT, INC. 95
Agency—D'Arcy Adv. Co.

CARBIDE & CARBON CHEMICALS CO. DIV. OF UNION CARBIDE & CARBON CORP. ..... 4th cover
Agency—J. M. Mathes, Inc.

CELANESE CORP. OF AMERICA 45
Agency—Ellington & Co., Inc.

CHEMICAL MANUFACTURING CO. 65
Agency—The House of J. Hayden Twiss

CHICAGO BRIDGE & IRON CO. 54
Agency—Russell T. Gray, Inc.

CORNWELL CHEMICAL CORP. 25
Agency—Picard Marvin Inc.

DAVISON CHEMICAL CO. 91
Agency—St. Geoges & Keyes, Inc.

DAY CO., INC. J. H. 72
Agency—Strauchen & McKim Adv.

DIAMOND ALKALI CO. 5
Agency—Fuller & Smith & Ross, Inc.

DODGE & OLCOTT, INC. 40
Agency—Caleon Adv. Corp.

DOWELL INC. 1
Agency—Rives, Dyke & Co., Adv.

THE DURIRON CO. 13
Agency—Kircher, Helton & Collett, Inc.

DUREZ PLASTICS DIV. HOOKER ELECTROCHEMICAL CO. 56
Agency—Comstock & Co.

EMERY INDUSTRIES, INC. 41
Agency—Ruthrauff & Ryan, Inc.

ENJAY CO. 47
Agency—McCann Erickson, Inc.

FIRESTONE PLASTICS CO. 93
Agency—Grey Adv.

FOSTER WHEELER CORP. 85
Agency—Marsteller, Rickard, Gebhardt Reed, Inc.

FRITZSCHE BROS. INC. 84
Agency—Caleon Adv. Corp.

GATES ENGINEERING CO. 14
Agency—Gauge Assoc.

GENERAL AMERICAN TRANSPORTATION CORP. TERMINAL DIV 12
Agency—Edward H. Weiss & Co.

GENERAL AMERICAN TRANSPORTATION CORP., WIGGINS DIV. 79
Agency—Weiss & Geller, Inc.

GERMAN-AMERICAN TRADE PROMOTION OFFICE 84
Agency—Charles Jay Co., Inc.

GRAVER TANK & MFG. CO. 50-51
Agency—Ladd, Southward & Bentley, Inc.

THE C. P. HALL CO. 76
Agency—Cruttenden Adv.

HARSHAW CHEMICAL CO. 6

HERCULES POWDER CO. 75
Agency—Fuller & Smith & Ross, Inc.

INGALLS SHIPBUILDING CORP. 10
Agency—Liller, Neal & Battle, Adv.

INTERNATIONAL PAPER CO. 7
Agency—Picard Marvin Inc.

KELCO CO. 64
Agency—Cayton, Inc.

KELLOGG CO., THE M. W. ..... 3rd cover
Agency—Fuller & Smith & Ross, Inc.

LUCIDOL DIV., WALLACE & TIERNAN, INC. 88
Agency—Barber & Drullard, Inc.

LUMMUS CO. THE 32
Agency—G. M. Basford Co.

MERCHANTS CHEMICAL CO. 73
Agency—G. M. Basford Co.

MERCK & CO., INC. 88
Agency—Charles W. Hoyt Co., Inc.

METASAP CHEMICAL CO. 62
Agency—Lewin, Williams & Saylor

MICHIGAN CHEMICAL CORP. 43
Agency—Wesley Aves & Assoc.

MISSISSIPPI RIVER DEVELOPMENT CORP. 30
Agency—Bauerlein Adv.

MUTUAL CHEMICAL DIV., ALLIED CHEMICAL & DYE CORP. 19
Agency—The House of J. Hayden Twiss

NATIONAL ANILINE DIV. OF ALLIED CHEMICAL & DYE CORP. 53
Agency—James J. McMahon, Inc.

NATIONAL ENGINEERING CO. 42
Agency—Russell T. Gray, Inc.

NATIONAL PETRO-CHEMICAL CORP. 2
Agency—G. M. Basford Co.

OXY-CATALYST, INC. 61
Agency—Gray & Rogers, Adv.

PHELPS DODGE REFINING CORP. 57
Agency—The House of J. Hayden Twiss

PFIZER & CO., CHARLES 77
Agency—MacManus, John & Adams, Inc.

PITTSBURGH COKE AND CHEMICAL CO. .....
Agency—W. S. Walker Adv., Inc.

POWELL CO., THE WILLIAM 80
Agency—The Ralph H. Jones Co.

PROCON, INC. 8
Agency—Sam J. Gallay Adv. Agency

REYNOLDS METALS CO. 49
Agency—Clinton E. Frank, Inc.

ROCKWELL MANUFACTURING CO. 86
Agency—Marsteller, Rickard, Gerbhardt, Reed, Inc.

RODNEY HUNT MACHINE CO. 15
Agency—John Mather Lupton Co., Inc.

ROHM & HAAS CO. 63
Agency—Arndt, Preston, Chapin, Lamb & Keen, Inc.

RUBBER CORP. OF AMERICA 86
Agency—Ovesey & Straus, Inc.

SHELL OIL CO. 9
Agency—J. Walter Thompson Co.

SOLVAY PROCESS DIV. ALLIED CHEMICAL & DYE CORP. ..... 2nd cover
Agency—Atherton & Currier, Inc.

SOUTHERN STATES IRON ROOFING CO. 4
Agency—George & Glover, Adv.

D. R. SPERRY & CO. 88
Agency—Illinois Simmonds & Simmonds, Inc.

STEELCRAFT MFG. CO. 92
Agency—Farson, Huff & Northlich, Inc.

STRAN-STEEL CORP. NATIONAL STEEL CORP. 46
Agency—Campbell-Ewald Co.

TITANIUM PIGMENT CORP. 20
Agency—Doyle, Kitchen & McCormick, Inc.

TRUBEK LABORATORIES, INC. THE 37
Agency—Ray Ellis Adv.

UNION BAG-CAMP PAPER CORP. 35
Agency—Smith, Hagel & Knudsen, Inc.

U. S. INDUSTRIAL CHEMICALS CO. .. 27-28
Agency—G. M. Basford Co.

U. S. RUBBER CO. 66
Agency—Fletcher, D. Richards, Inc.

U. S. STEEL CORP. 89
Agency—Batten, Barton, Durstine & Osborn, Inc.

WALLACE & TIERNAN, INC. 48
Agency—Branstater Assoc., Inc.

WYANDOTTE CHEMICALS CORP. 59
Agency—Brooke, Smith, French & Dorrance, Inc.

tracers SECTION

(Classified Advertising)

F. J. Eberle, Business Mgr.

CHEMICALS: Offered/Wanted 96

EMPLOYMENT 96

EQUIPMENT: Used/Surplus New For Sale 96

WANTED 96

MANAGEMENT SERVICES 97

SPECIAL SERVICES 96

ADVERTISING STAFF

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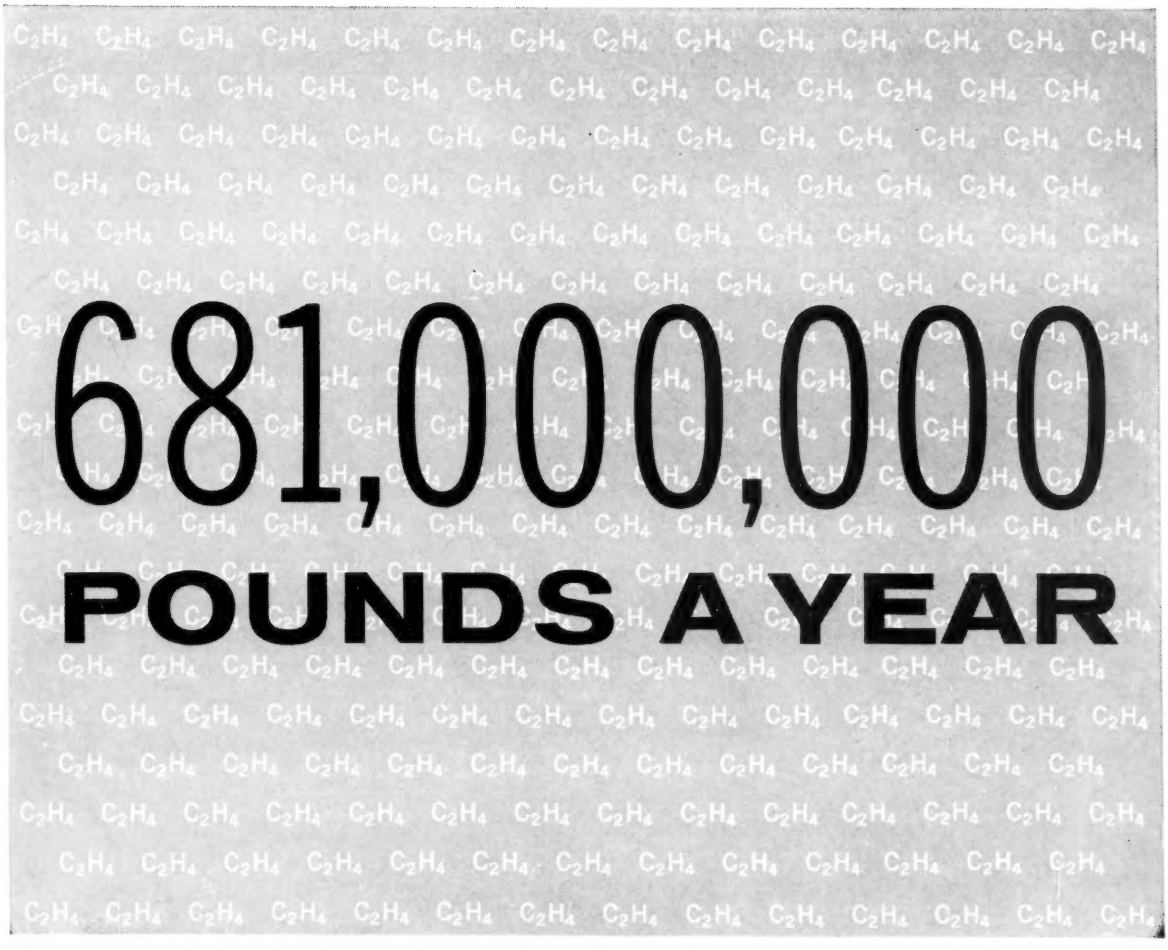
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